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ABSTRACT

Ten papers focus on aspects of a community integration approach for severely and profoundly handicapped students. Two general papers introduce the monograph: "Preparing Severely and Profoundly Handicapped Youth to Enter Less Restrictive Environments" (P. Wehman and J. Hill) and "Characteristics of an Appropriate Education for Severely and Profoundly Handicapped Individuals" (P. Wehman, et al.). The role of leisure time programing is examined in "Acquisition and Generalization of Leisure Skills in Severely and Profoundly Handicapped Youth: Use of An Electronic Pinball Machine" (J. Hill, et al.); "Integration of Severely and Profoundly Handicapped Youth into Community Based Recreation Programs: A Social Validation" (J. Hill, P. Wehman); "Developing Chronologically Age Appropriate Leisure Skills in Severely Multihandicapped Adolescents: Three Case Studies" (G. Horst, et al.); and "Use of an Automated Recreational Device to Facilitate Independent Leisure and Motor Behavior in a Profoundly Retarded Male" (J. Hill). Home management is the topic of papers by J. Hill and P. Wehman ("An Initial Assessment of the Needs of Parents of Severely and Profoundly Handicapped Youth") and S. Schleien, et al. ("Developing Independent Cooking Skills in Profoundly Retarded Women"). Two papers, by N. Harris, et al. and J. Hill and N. Harris on vocational education conclude the document: "Evaluating the Efficacy of Verbal Prompting, Social, and Token Reinforcers on Workshop Performance of Severely Multihandicapped Youth" and "Shaping Work Production in Severely and Profoundly Retarded Youth: A Changing Criterion Approach." (CL)

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INSTRUCTIONAL PROGRAMMING FOR SEVERELY HANDICAPPED YOUTH:

A Community Integration Approach

1980

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Paul Wehman

Janet W. Hill

Preface

The first year of the Richmond Secondary Project has been marked by efforts at helping severely and profoundly handicapped youth become integrated into the Richmond community. Curriculum has been derived from the functional needs of students and instruction provided in community settings such as retail stores, recreation centers, students' homes. Generalization of skills learned in the classroom has not been taken for granted (Stokes and Baer, 1977). Generalization objectives have been included on many of the student's Individual Education Plans and training taken place in numerous settings.

Training in community settings is not easy and, in fact, provides frequent logistical problems (Certo, Brown, Belmore, & Crowner, 1977). Yet it is imperative for at least two reasons. First, the issue of skill generalization and deriving appropriate curriculum is important as noted above. Second, regularly experiencing the community is a vital element of a severely handicapped student's educational program. Conversely, the community must experience and learn to interact with the severely handicapped individual. Neither of these events can occur in an educational model which is characterized solely by classroom instruction.

We have had success in developing and refining the trainer-advocacy model for helping moderately and severely retarded persons gain competitive employment (Wehman & Hill, 1979; 1980; in press; Wehman, in press). Therefore, the same model was applied in the past year with severely and profoundly retarded youth but in community programs such as Girl Scouts or weekly ceramic classes for nonhandicapped adults. Several of the papers within this program monograph describe our efforts in this vein.

We have tried to balance the papers in this monograph between leisure, domestic, and vocational curriculum. Clearly, work in the coming two years will be more refined and reach into more challenging areas. It is our hope and intent, however, that this monograph will help teachers and other practitioners concerned with developing and implementing appropriate and functional curriculum for severely and profoundly handicapped youth.

Paul Wehman

Janet W. Hill

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PREPARING SEVERELY AND PROFOUNDLY HANDICAPPED YOUTH TO ENTER LESS RESTRICTIVE ENVIRONMENTS

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Preparing Severely and Profoundly Handicapped Youth to Enter Less Restrictive Environments

Least restrictive environment has been a concept in special education which in the past five years has received a tremendous amount of attention. Numerous articles, (Switzky & Miller, 1977; Chambers, 1974), booklets, in-service workshops, and even court cases (Laski, 1979) have been generated as a result of this important provision in Public Law 94-142. Placement of students into the least restrictive environment infers that the student will be educated in a setting which is best suited for and most appropriate to his/her educational needs (Wehman & McLaughlin, 1980).

Controversy has arisen over this issue primarily because of different professional opinion on the value of segregated special school settings versus a placement which is characterized by daily integration with nonhandicapped peers. With severely and profoundly handicapped (SPH) youth this has been an emotional topic because of a feeling by some parents, administrators and teachers that with the latter educational option there would be excessive ridicule of these students and that support services would be significantly reduced. There is also a perception by some parents and professionals that little benefit would accrue to SPH youth or nonhandicapped peers if greater integration was accomplished. Hence a major administration change in service delivery is not considered necessary.

It is our position that segregation of SPH youth from nonhandicapped peers greatly reduces personal growth and development in even the most handicapped of these individuals. Furthermore we also believe that instructional preparation is necessary for movement into less restrictive environments and must be carried out systematically. What this means is that physical integration into a regular

school versus segregation in a special school is not, in and of itself, the only issue. Programming which occurs exclusively in the classroom, and practice on simulations is clearly inadequate for SPH individuals who are expected to function in heterogeneous community and domestic environments (Brown, Hamre-Nietupski, & Nietupski, 1977; Certo, Brown, Belmore & Crowner, 1977). Our position reflects a need to provide weekly training and generalizations for SPH youth in real community situations to prepare students for less restrictive environments. Training in real environments may involve initial embarrassment for staff when a student urinates on the floor of a Seven-Eleven store; it may involve initial staff discomfort when members of a predominantly non-handicapped night class in recreation stare at an SPH young adult who exhibits stereotypic noise-making responses; and it may involve pride when an SPH student is not even identified as handicapped in a local bowling alley. It is critical for staff to feel these emotions if they are to be able to relate to parents' reluctance to take their son/daughter to the store, to church, or for a walk to the park.

Therefore, the purpose of this paper is to discuss a) a rationale for a classroom-community instructional model (Certo, Brown, Belmore & Crowner, 1977), b) techniques and resources for implementation, and c) specific problems which occur during implementing a community-based public school program. The thoughts and strategies contained in this paper arise from efforts toward the development of a community access model for severely/profoundly retarded adolescents in our initial year of establishing the Richmond Secondary SPH Project.

Rationale for a Classroom-Community Model of Instruction

There are at least eight reasons for implementation of an instructional model for SPH youth which is characterized by instruction that occurs in both the class and local community. These include: improved likelihood of skill generalization, reinforcer sampling, awareness by nonhandicapped people, appropriate role models for SPH youth, elevated teacher expectations and interest, parent hope, demonstration of competence by SPH students, and appropriate curriculum selection.

Skill Generalization and Enhancement

The probability of an SPH student performing a skill in a setting different from where it was originally learned is highly unlikely without sufficient practice (Stokes & Baer, 1977; Wehman, Abramson & Norman, 1977). Self-initiation of skills is also hindered through teaching which is limited to the classroom because the classroom provides an extremely limited array of discriminative stimuli. The teacher generally must create artificial discriminative stimuli which usually take the form of verbal prompts. Under such conditions, skill development for students remains at a "prompted only" stage; self-initiation of skills is clearly thwarted.

Consider, for example, the dilemma of teaching the use of picture communication cards of a student's favorite foods in the classroom. The teacher chooses cards based upon Parent's input of the student's favorite foods and ice cream is included. After a long teaching process of associating picture card with the food item, the student finally self-initiates showing the ice cream card at lunch but no ice cream is available. An opportunity for greatly enhancing that skill has been lost.

Therefore, if true generalization is to occur it is imperative to provide sufficient opportunities for practice in real situations where all the variables cannot be controlled but where potential discriminative stimuli do naturally exist. Usually two to three different environments are necessary before generalization is achieved. The greater the similarity between the original learning environment and the generalization setting(s), the quicker that transfer of training will occur. Skill generalization cannot be assumed to occur without instruction.

Reinforcer Sampling

Severely handicapped youth will never be aware of the reinforcing aspects of community living and facilities if they have never experienced them. The pleasure of sitting in a park, bowling with one's family, going to a movie theater or eating pizza in a local restaurant cannot be reinforcing until one has experienced it. Furthermore, many reinforcing aspects of community facilities are not reinforcing until one has developed some degree of proficiency within the environment. Therefore, one time field trips are wholly insufficient and systematic instruction must be provided.

Awareness by Nonhandicapped People

Shopkeepers, bus drivers, clergy, and people in the neighborhood need to be aware that SPH individuals are part of the community. Severely handicapped youth and young adults must be present in the community and begin interactions with nonhandicapped people. Typical citizens in a community neighborhood will respond more positively to SPH individuals, over time, if they are exposed to them more frequently (Voeltz, 1980).

Appropriate Role Models

Severely handicapped youth cannot be expected to develop more sophisticated behavior if they are only exposed to other SPH youth. It is critical that other higher functioning and nonhandicapped models be available for interaction. For example, anecdotal data from our project indicates that some SPH students who exhibit hand-biting behaviors and sterotypical actions, in the presence of each other, cease these actions when in the presence of higher functioning retarded persons who display more normal behavior. Although this is not always the case, it appears that a segregated SPH environment may support maladaptive behaviors.

Elevated Teacher Expectations

One problem faced by SPH teachers traditionally, has been that their students rarely function in the community and usually do not advance into more sophisticated vocational and leisure environments. The rate of teacher "burn-out" grows and morale declines since limited progress is observed in students. Instruction in the community, however, is one excellent means of linking the real world with classroom instruction. Once this model is in place, a greater sense of relevance is attained and training takes on a more significant purpose.

Parent Hope

By the time SPH students enter adolescence, parents' hope may already be diminished for the probability of their son/daughter's integration into the community. Living at home and never coming out of the house is not community integration. A classroom-community model demonstrates to parents that staff

are not afraid to take students into the community; it shows that staff believe students can acquire appropriate community living skills. Parents need to draw strength and support from teachers. In turn, teachers and other professionals must provide leadership in community skill training.

Demonstrations of Competence by SPH Students

Community access is an ideal opportunity for students to demonstrate their abilities. It is an excellent means to illustrate the competence of SPH individuals for nonhandicapped people and curious bystanders in different parts of the community. As noted earlier it can also be very embarrassing for staff. The converse is true as well, however. Helping an SPH student fit into a group of nonhandicapped people, wait in line appropriately, or make a purchase correctly are all signals to staff that instruction is proceeding effectively.

Curriculum Selection

Only after several failures and embarrassments in the community i.e., student getting lost, will the most obvious and relevant skill priorities emerge for classroom instruction. The type of curriculum presently employed in many trainable retarded and SPH classes will begin to appear inappropriate when evaluated in the context of repeated problems which occur in community situations. At this point, the teacher and parent must identify more appropriate objectives to include into the student's curriculum.

Techniques and Resources for Implementing the Classroom-Community Model

With a firm rationale established for a classroom-community model, it is necessary to outline service delivery resources which facilitate direct interaction between SPH youth and nonhandicapped people in integrated settings and prepare students for less restrictive environments. There are many different strategies and each one may have direct impact on refining classroom teaching content by facilitating a reselection of skills which have generalizable value in community settings.

The first step in the utilization of community resources for integrative purposes is to consider what types of natural community settings should be utilized for training. Ideally, these settings will require skills that are being taught in school and have been, at least in part, acquired by students. Some degree of initial skill proficiency will facilitate community-based training. The initial step into the community may be very difficult depending upon the functioning level of students and the emphasis of the program. However, in numerous community settings we have recognized that, although the student may be limited to partial participation in an environment (Brown, Branston-McClean, Baumgart, Vincent, Falvey & Schroeder, 1979), a pool of more subtle skills requirements can be systematically addressed. The realm of such requirements may largely involve selected social behaviors in public such as: waiting in line skills, appropriate posturing of body, social interaction skills, reduction of stereotypic behavior, etc. (Hill, Wehman & Pentecost, in press).

Guidelines for Community Access

Several guidelines are recommended when attempting to work with any community resources. These include:

1. Personal contact with the community resource i.e., administrator of gifted program, to describe the need for interaction between handicapped and nonhandicapped people.
2. Orient nonhandicapped participants to program and students prior to first meeting. Video equipment has been shown to have a positive affect on attitudes.
3. Insure that a greater number of nonhandicapped people are available during the interactions. In order to maintain a normalized situation with lower functioning students, only one or two students should be integrated to avoid disruption of the setting.
4. Use a trainer-advocacy model during interactions. This model is characterized by accompanying an SPH individual into the community and providing training to that individual as well as inservicing the nonhandicapped participants. This model has been successfully used by Wehman and J. Hill (in press) in job placement of moderately and severely handicapped adults.
5. Provide opportunities for nonhandicapped to express feelings on an on-going or pre-post test basis. Social feedback is a critical means of evaluating how SPH individuals are being accepted and the general receptivity of the integrative environment.

6. Allow nonhandicapped participants to see handicapped students demonstrating a chronologically age appropriate skill thereby exhibiting a more normalizing appearance (Wolfensberger, 1972).
7. Insure that the nonhandicapped participants are at least the same age or older. Although it may be easier to integrate nonhandicapped children with SPH adolescents, this arrangement is clearly undesirable for instructional purposes and normalization.

The next several sections describe specific strategies for facilitating social interactions between SPH students and nonhandicapped members of a community.

Use of Other Local Public Schools for Generalization of Skills

The first community access strategy to be described is the use of skill generalization in other public schools. Task-oriented skills which can be generalized include mealtime behaviors (tray line, etc.), kitchen utility or janitorial activities, active physical activity, shop art skills, etc. Social skills which may be addressed can range from social interactions with peers in the hallways, maintaining eye contact, appropriate spectator behaviors during a seasonal play, or perhaps simply trying to walk more like an average teenager with hands in pockets, etc. Previously minor or unnoticed inappropriate social responses will immediately draw attention in a predominantly nonhandicapped environment. Other public schools will be a good "try-out" before going directly into less controlled environment.

Use of Real Homes During the School Day for Domestic Instruction

Another readily available community resource is the use of parents' homes or community group homes for domestic instruction. The principle asset of this approach is the opportunity for simultaneous training of parents and students. In group homes there are added benefits of community worker inservice and exposure to potential future clients. The need for continued generalization training emerges clearly in these settings due to utilization of different equipment such as water faucets, toasters, and even different brooms.

Use of Peer Tutors from Other Programs

The use of peer tutors has been described with a variety of mentally retarded populations (Poorman, 1980), but little has been attempted with an SPH group. We are currently initiating a peer tutor model with a group of gifted students in our inner city school system. The gifted program allows senior high students to take on human service projects and has agreed for the peer tutoring model to serve as senior thesis projects. The nonhandicapped models will be constructing programs such as generalization of leisure skills (pinball, darts, etc.), joint participation in team sports, and providing peer-type feedback on social skills and body posturing. Some gifted students will be involved in work training in the community. Although, this aspect of the program is in its earliest stages, it appears that it may prove to be another untapped resource for social interaction with nonhandicapped youth and community integration for SPH students.

Use of Community Facilities Near Student's Home or Near School

During the initial planning phase of the Richmond SPH Secondary Project families of 18 students involved were carefully interviewed. Interviews overwhelmingly revealed the fact that the students generally did not accompany their parents or siblings on any type of community errand, trip, church or social activity other than perhaps visits to a relative's home. The reasons stated were (1) embarrassment due to inappropriate behavior and (2) lack of acceptance on the part of the community (i.e. staring). Although initially generalization training will prove more cost effective in community facilities which are close to the school program (e.g., a nearby bowling alley for pinball generalization), the student's home community should be systematically approached if one intends to impact on parent/sibling behavior. For example, if school personnel initiate the first few training sessions in the mother's local grocery store and then gradually add the mother's presence and supervision, two previously restrictive forces are dealt with simultaneously i.e., the low expectation of the mother and the inexperience on the part of grocery store staff/consumers. Demonstrating acquisition of skills such as pushing a grocery cart and waiting in line appropriately also will facilitate the mother's continued interest and efforts in having the adolescent accompanying her on errands.

The challenge for continued generalization training during the school day will also require that the community surrounding the school be exposed to the student in a systematic fashion. Owners and managers should be contacted and the program described. Utilizing several facilities on a repeated basis will prove positive in that managers and staff will become accustomed to the use of picture communication cards, response time delay, scattered data sheets, etc.

Use of Community-Based Recreation Classes and Scout Troops for Nonhandicapped Individuals

City or county evening recreation classes, team sports for nonhandicapped youth and adults, and regular scout groups provide another easily accessible resource for community integration of SPH adolescents. A major advantage of this approach has been that we have experienced little or no resistance from the instructors, leaders or participants in that there appears to be a pervasive attitude that any person has a right to participate in these activities. To reinforce this attitude and to avoid disruption of the social group, mainstreaming of only one or two students per troop should be attempted. These situations also provide the rare opportunity to integrate more profoundly handicapped persons who may be confined to a wheelchair or reclining type chair for partial participation purposes. This is especially true of girl scout programs whose activities are largely sedentary and social in nature with limited motor requirements.

City/county evening recreation classes (e.g. ceramics, water color, etc.) which are usually only attended by nonhandicapped also provide an atmosphere that may accomodate SPH students with less refined social skill development. In general, the nonhandicapped participants are busily involved with their own projects and pay little attention to aberrant vocal or mild physical stereotypes, yet social interactions and modeling can be orchestrated between the handicapped and nonhandicapped.

Other more obvious benefits to this integration resource are that such groups or classes generally take place in most neighborhoods and parents can be involved. In order to help the handicapped individual project an image as closely aligned to his chronological age as possible and facilitate the development of appropriate social interactions, parents should probably not attend meetings initially with their child. Later, after repeated exposure

and advocacy stressing the young adult status of the handicapped adolescent(s), parent(s)/siblings should be added to the setting occasionally. Usually, this will be the first time the parents will have viewed their child functioning adequately in a nonhandicapped group.

Skills which can be potentially generalized to these settings are a wide variety of tasks requiring fine dexterity such as tying, scraping, assembly-type, etc. as well as increasing on-task behavior, direction following, compliance etc. The area of behavior change which has been most notable from our efforts, however, has been the observed increased in the use of alternative forms of communication. For example, one profoundly handicapped young lady was equipped with a beeper attached to the head rest of her reclining chair in order to signify "yes" approximately six months prior to her placement in a scout troop. Since her motor movement was limited to lateral head turns, the beeper was viewed as vital to her program in general. For six months, progress remained extremely slow within the school setting with the teacher contriving as many yes/no situations as possible. When mainstreaming in a regular scout troop occurred, nonhandicapped scouts were informed that the student communicated "yes" through the beeper, even though the behavior was observed infrequently at school. The nonhandicapped girls, then, wanting to communicate began to overwhelm the student with yes/no questions and waited trustingly for a response. Due to the natural discriminative stimuli, the beeper response increased greatly in frequency and in stimulus-response speed during scout meetings. Unexpectedly, however, the same progress is now observed in the school setting especially when the young lady is asked about her girl scout troop. Similar increases in verbal behavior and picture card use have been observed with other students who have been provided opportunities to interact with nonhandicapped youth and adults.

Use of Local Sheltered Workshops or Work Centers for Partial Participation

Work generalization opportunities usually represent the most difficult area to penetrate in the integrative process of severely and profoundly handicapped. Unless a privately funded sheltered workshop exists, state rehabilitation funds simply do not subsidize the maintenance of the slow worker on a short or long term basis. Thus it is not profitable for a workshop to accept the SPH worker. In many geographical areas, the only means of enrolling a handicapped person in a workshop program is to pay approximately $15 per day in fees for "work adjustment" training. If this is the case, state grants such as CETA or mini-grants from service organizations such as the Council for Exceptional Children should be examined as alternative funding sources. However, depending upon the orientation of the workshop staff, a cooperative agreement could be established to allow integration of SPH students to the facility on a non-paid basis in exchange for a variety of reinforcers which school staff could provide. These are: extra school staff, in-service training for workshop staff, improved interface between school and workshop, free production work done by SPH students, etc. Similar negotiations can be made with community work activity centers and probably will be more favorably met in these settings. The program orientation of these centers, however, must be critically examined prior to program interface because some centers may still provide a protective environment yielding only supervised recreational experiences.

Prior to work generalization training, an in-school work setting should be established and be equipped with either simulations or real work materials from the local workshops/work centers. If this has been accomplished, then generalization training of these skills will flow smoothly when integration finally occurs. With basic work acquisition accomplished in school, the new

setting will provide an arena in which to emphasize increases in general work behaviors such as: work endurance (length of work day), production rate, work consistency, appropriate interaction with supervisor/coworker, appearance, and acquisition of workshop routine.

Problems in Implementation of a Classroom-Community Model

The problems in converting from a traditional classroom model to one with a community focus are many. Each locale will have its own set of difficulties. We will share here, however, the problems which have arisen in model development within a predominantly inner-city area.

Administrator Reluctance

Many school system officials will show resistance to the classroom-community model due to low skill expectations of students, logistical problems in what appears to be continual traveling by an "incompetent" group of students, and lack of commitment to the concept of integration. Some strategies to assist administrators in justifying the extensive program innovations needed in the classroom-community model are outlined below.

Shaping the process. In many parts of our country, we not only find SPH students segregated from nonhandicapped students but also from the mildly and even moderately retarded peers. If this situation exists, one should begin integrative efforts with proposals to interact with these groups through lunch and leisure skills generalization experiences. In our area, the idea of interacting with regular inner-city high school students was met with skepticism and even shock, due to actual safety concerns. Our initial approach, then, has been to provide planned interactions with special groups such as the "gifted" or technical education students during the school hours. After students

have demonstrated some proficiency with other special groups of students, administrative concern may abate and permit more diversified integration efforts,

Logistical Concerns. Extensive prior planning and written schedules sent to all relevant personnel from the superintendent down to teachers will facilitate efforts. Starting efforts on a small scale will also be needed to insure nearly one to one coverage during the first stages as well as attempts to involve administrators in the planning process.

Social Validation. Social validation of integration efforts can be accomplished by surveying the attitudes of the regular education teachers, nonhandicapped students and others involved. Survey results indicating acceptance and receptivity to the concept by the nonhandicapped community can then be used as justification for the expansion of integration activities.

Parent Interest

Parents can be the greatest facilitators to the classroom community model or, if uncommitted, the greatest hinderance to its success. Parent interference stems from a variety of reasons which must be examined and understood by the educator if a behavior change procedure is to be developed. Some reasons for parent interference are outlined below with some suggested intervention strategies.

Lack of Commitment to Program Content. Parents may not see the program as important or relevant to their lives. This situation occurs frequently in education programs for SPH because, historically, classroom teaching content sometimes lacks functionality, e.g., tactile discrimination, peg board training, etc. Home visits identifying one or two program areas truly needed or

desired by parents can be used as an incentive for greater parental support and involvement in community integration efforts.

Fear/Embarrassment/Low Expectations. Parents often rationalize the segregation of their child from the community due to the lack of community acceptance. Many parents feel that the community will never accept handicapped persons. Furthermore, many parents will admit that it is easier to institutionalize a child in a home rather than strive for community integration. Exposure of the SPH child to the community is difficult and can be embarrassing. Student behavior can be unpredictable and will arouse much attention. As previously described, however, parent behavior can be shaped to increase community exposure for their child. Educators who demonstrate to parents their willingness to try integration alone and later together will be able to overcome these parental feelings and attitudes.

Pattern of Life Already Firmly Established. Especially when dealing with adolescent SPH populations, family life shows a long history of adjustment through segregation and isolation from the community. Requesting that parents now take time to change their lives and that of their child's by requiring more of the child may be met with disapproval. Just as administrators wish not to disturb the status quo, parents are often so thankful that their child is now in school, even if only for five-six years, that they do not wish to apply pressure for more integrative services. This feeling arises from a fear of losing what is already available. In addition, they may not be aware of the benefits which can be derived from interactions in nonhandicapped environments.

Provision of information regarding the entry level skills for adult (over 21) day support and group home programs may help facilitate the necessary changes in attitudes. This assistance will also build their enthusiasm in more innovative programs such as mainstreaming in recreation class or

scout programs. Integrative efforts should first begin with children of interested families. These families can then participate in recruitment efforts with other more resistive families.

Inappropriate Classroom Preparation

The very nature of traditional SPH programs at all age levels generally restricts community integration efforts. Necessarily, our focus is often self-help, motor and rudimentary communication skill training. Children are segregated at an early age in, at best, a highly controlled environment. Skill development is emphasized in areas which in actuality cannot readily be practiced in the community on an on-going basis. For instance, years are spent in training on skills such as toileting, dressing, hygiene, home clean-up, food/snack preparation etc. These skills, for the most part, can be generalized only to a home setting. In general SPH individuals have had little community exposure and do not have the slightest concept of appropriate social behavior in public or simple community-type skills such as how to open the door to a shop, that money is required to purchase items and that eye contact is required when dealing with people. Although the traditional areas of emphasis, of course, must be continued, the realm of social behavior in public and community-type skills must also be systematically practiced at early ages.

Staff Discomfort

As previously described community integration of SPH adolescents can be difficult, frightening, and embarrassing. Staff will go through

an incubation period with their thoughts fluctuating between the philosphy ". . . is it worth it?' to "this is what its all about." It is important to realize that the process does become easier for both staff and students with repeated exposure. The discomfort is profitable, however, because for the first time one is able to truly empathize with parents and other family members on the strain associated with community living with a SPH child.

Transportation and Insurance Liability

The proposition to begin this type of extensive community integration will be met with resistance by many sources especially due to constantly rising transportation costs. Negotiations and compromises with the funding source or administrators will be needed even when the argument is presented in its most convincing light. Much of our transportation is accomplished through teacher's vehicles who are reimbursed for travel either through the school system or grant funds. Travel reimbursement for teachers is a recent phenomenon due to the need for home visits including IEP signing, etc. If no funds exist for travel then creativity must be exercised through one of the following means: organizing parent, university student, or volunteer car pools, use public transportation with ambulatory students, utilize facilities within walking distance, bring nonhandicapped peers into school program, begin full day mainstreaming in a regular high school once a week utilizing the regular school bus.

Questions regarding liability in the community is an anticipated area of concern from administrators and teachers, alike. This matter should be

discussed with the attorney for the public school system and an appropriate parental permission form should be developed with his/her input which may read as follows:

> I understand that my son/daughter is involved in a program which provides systematic training in community settings in order to assist generalization of skill development. I also understand that this may include training in various community locations other than school. I hereby give permission for my child to attend and to be driven to various community locations by Public School or Project staff for training in these settings. These may include various community settings, recreational settings, local business (e.g. grocery stores) and/or public buildings. I understand that prior notice will be given to me before any specific transportation is provided, and that my child will be supervised at all times that he/she is not at school.

While in the community the same contingencies for negligence are in effect for handicapped and nonhandicapped persons. That is, if an accident occurs in a community business or facility due to negligence on its part, the business or facility is then responsible. If the student is injured due to his/her own negligence, then the student or family is responsible. If the supervising teacher is negligent, then the public school system and/or the teacher is responsible. Insuring proper staff coverage is a prime consideration.

Conclusion

A gradually emerging philosophy in the education of the severely and profoundly handicapped is that the most appropriate programming for these individuals must include direct interactions with nonhandicapped persons. It is believed that such educational policies will facilitate greater community integration and thereby, prevent future institutionalization or family isolation in the community. In addition, improved effectiveness and functionality of the training would be realized as well as higher teacher morale and

expectation for students under such circumstances. However, if this new philosophy of educational practices with the SPH is to occur, educators must change traditional curriculum content and training to include: 1) training in task-oriented skills and social skills which can be readily practiced in the community (e.g., task-oriented skills: pushing a grocery cart, carrying a bag while walking, etc., social skills: appropriate posturing of hands, smiling etc.) and 2) early and continued generalization training in natural community settings on a regular basis. Without reliance on community-derived curriculum content, educators will continue to teach nonfunctional skills in highly artificial learning environments.

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CHARACTERISTICS OF AN APPROPRIATE EDUCATION FOR SEVERELY HANDICAPPED STUDENTS

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Characteristics of an Appropriate Education for Severely Handicapped Students

Despite recent attacks upon the viability of public school programming (Burton & Hirshoren, 1979), many classroom teachers and administrators are convinced that severely and profoundly handicapped students can be effectively served in the public schools (Brown, Wilcox, Sontag, Vincent, Dodd, & Gruenwald, 1979; Sontag, Burke & York, 1973; Sontag, Certo, & Button, 1979). Unquestionably, as more severely handicapped children are identified for educational services, the nature of their program will be closely surveyed and scrutinized by critics. Accountability for educational programming with severely and profoundly handicapped (SPH) students is currently being tested in several federal courts (e.g., Mathews v. Campbell, 1979). It is incumbent on those involved in providing educational services to SPH students to carefully assess the impact and effectiveness of classroom programming.

This paper was developed in order to help SPH teachers evaluate the "appropriateness" of each child's program. Although there are several publications which discuss instructional programming for SPH students e.g., Sontag, Certo, & Smith, 1977, a controversy remains over what appropriate education is for SPH students (Burton & Hirshoren 1979; Mathews v. Campbell, 1979). The 11 characteristics delineated in this paper will hopefully guide teachers in designing appropriate educational programs for SPH students of all ages and functioning levels. They include:

1. Classroom schedule
2. Instruction outside of classroom
3. Specific objectives
4. Functional activities
5. Age-appropriate curriculum
6. Instruction in small group
7. Instructional cue hierarchy
8. Integrated therapy

9. Interaction with nonhandicapped
10. Data Collection
11. Periodic revision of IEP

Classroom Schedule

The initial development of an educational program should result in a structured and specific written schedule depicting what each student and adult in the class should be doing. A program schedule must reflect a minute-by-minute analysis of student and teacher activities from the point of student arrival to student departure. The classroom schedule should be written in order to avoid ambiguity about who is responsible for which activity and with which child. With the use of university students, high turnover in classroom aides, and volunteers it is imperative that a schedule be available for all adults to consult. The schedule is an important tool for facilitating structure in the SPH classroom. The elements listed below should be in the classroom schedule.

1. The specific skill(s) being taught is identified.
2. The time of day which the skill(s) is to be taught is identified.
3. The child or group of children receiving instruction on a specific skill area is specified.
4. The adult responsible for instruction is identified. It is expected that teachers would be varied.
5. The setting (hallway, cafeteria, outside, etc.) for instruction is identified.

Development of a schedule in this manner also allows for careful analysis of the daily sequencing of activities. It is usually necessary to vary the nature of activities from fine motor - sit down type tasks to those activities which allow for movement around the building or outside.

Instruction Outside of the Classroom

A second characteristic of an appropriate education for SPH students involves increased levels of instruction outside of the student's classroom. Continued instruction on bus riding skills, use of a telephone, making change, using the toilet, eating, and countless other behaviors must be conducted in the environments and settings where they are typically expected to occur. The classroom-community service delivery model proposed by Certo, Brown, Belmore, and Crowner (1977) is viable for SPH students and has numerous advantages over the classroom-only model.

The classroom training model has been tried for years and has been found to be seriously lacking since it does not facilitate the generalization of skills nor does it promote efficiency of instructional programming that allows for training in a variety of settings. It is necessary to program for skills which occur in their natural environment.

For example, if a teacher desires a student to acquire and perform the cluster of kitchen clean-up skills necessary to successfully adjust to the requirements of a part time bus boy position in a local cafeteria, it is not sufficient to practice wiping off tables in the classroom. It is specious to assume the student can and will generalize these skills to the local cafeteria. To help students succeed to the requirements of a nonhandicapped worker environment, training must be provided in real environments.

Clearly, extended instruction outside of the classroom violates the tradition of many TMR classes and SPH programs currently in existence. Yet the alternative of continued situation specific learning by students and self-contained class segregation is no longer acceptable. Teachers

must begin to build goals into the IEP which reflect instruction across different settings than the classroom.

Specific Objectives

The development and selection of specific IEP objectives for each child is a necessary cornerstone of any program. Without objectives which reflect learning conditions, a realistic criterion and observable behavior, efforts to monitor behavior change i.e., educational progress will be inhibited. The accountability of educational programs for SPH students continues to come under scrutiny (e.g. Mathews v. Campbell, 1979) and clearly stated objectives are necessary to avoid the ambiguity which results from vague goals.

Objectives should be selected from community-derived curriculum sequences which are consistent with the child's functioning level. They should be selected in such a way as to suggest the logical order of ensuing objectives in a skill sequence. Regretably, many TMR and SPH teachers elect IEP objectives from developmental checklists, behavioral screening inventories, and even standardized tests. Identifying student objectives in this way typically results in goals such as:

"Harold will jump on one foot for 4 out of 5 trials."
"Sandy will string 10 beads for 4 out of 5 days."

The functional utility of these goals is clearly lacking since few environments require these two behaviors. Furthermore, this goal selection suggests that teachers are attempting to teach to a given test or inventory rather than building specific behaviors which cumulatively will evolve in functional independence in the student.

Functional Activities

Selection of specific objectives leads to the development and implementation of functional teaching activities and materials. Brown[1] defines functional as "if the student cannot do a given skill would a teacher have to do it for him/her." Functional activities are done in real environments with real materials.

Below are illustrations of functional activities and real materials as contrasted with traditional activities found in many SPH and TMR classrooms.

Goal	Traditional	Functional
to tie shoes	use lacing board	use real shoes
to increase attending in workshop	use pegboards and beads for lacing	assemble and produce real products from local industry
to develop arithmetic matching skills	matching colors and shapes	matching pictures communication board to item in vending machine
to develop independent ambulation skills	to walk or roll in wheelchair to different points in classroom	to walk or roll to different points in real environments outside classroom
to develop motor imitation skills	to copy teacher behavior to clap hands, tap head, and pat knees	to copy teacher's behaviors of putting fingers to mouth ("eat" sign)

Examples of traditional vs. functional activities can be generated endlessly. The proliferation of nonfunctional activities can probably be traced to several possible origins. First the deluge of developmental

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[1] Personal communication between Lou Brown and Paul Bates, April, 1979.

commercial materials which have appeared in recent years has influenced TMR and SPH teachers in their choice of materials and accompanying activities. Second, there is a strong orientation among many educators that traditional activities are necessary "lead-up" skills or critical to the "readiness" of the child. This philosophy accounts, in part, for the reason that 20 year old students have acquired isolated skills which have no apparent functionality i.e., can match red pieces of construction paper but cannot identify a red coat from a blue coat. Finally, due to inadequate teacher preparation programs and/or inservice efforts, teachers frequently do not know what an appropriate standard is for activity selection.

Age Appropriate Curriculum and Materials

Closely related to the selection of functional activities is the utilization of curricular materials and activities that are consistent with a student's chronological age. Regardless of the skill or developmental level, as measured by standardized instruments, materials can and should be modified to reflect an individual's chronological age. For example, a "velcro" dart board may be made available and encouraged as a recreational activity for SPH adolescents rather than a frequently used game consisting of throwing a bean bag into "Bozo's" mouth. Both of these games require similar skills, but one is clearly more age appropriate than the other.

Classrooms and instructional settings should also reflect the chronological age of the students being served. The furniture, physical arrangement, bulletin boards and other characteristics of the physical environment must be carefully evaluated in terms of age appropriateness.

Although "Mickey Mouse" and "Peter Rabbit" may be at home in pre-school or primary classrooms, they should not adorn the walls or bulletin boards of secondary classrooms regardless of the student's level of functioning. Both classroom decor and educational activities in a secondary classroom should reflect an emphasis on preparation for adult living in the least restrictive environment possible. This is especially true for SPH students because there is little time to waste. Due to the severity of their handicaps, the years of public school education are crucial.

Interactions with SPH students should be representative of interactions with any individual within a similar chronological age group. As we do not refer to non-handicapped 18-21 year olds as "kids" or children, neither should we refer to SPH 18-21 year olds as such. They too deserve to be dignified with "young man" or "woman" or at least the somewhat ageless label of "student." Similarly, the practice of delivering physical affection in the form of hugs and kisses or praise such as "Good boy" or "Good Girl" is all but appropriate for an adolescent/adult age group. In fact this frequently results in student imitation. Consequently, SPH adolescents and adults all but attack by "grabbing," holding hands with, hugging, and "hanging on" to familiar as well as unfamiliar individuals who enter their environment. This problem could be avoided by modeling appropriate verbal greetings, praise, hand shakes and waves and expecting/teaching the same in response. Our goals and expectations for SPH individuals should be socially equitable (Bellamy, Horner & Inman, 1979). We must, therefore, allow SPH students the respect and potential risks experienced by nonhandicapped students approaching adulthood. The utilization of age appropriate curricula and materials is basic to this concept as well as to the overriding philosophy of normalization.

Instruction in Small Groups

Instruction in small groups frequently maximizes the opportunity for observational learning. Although a teacher cannot assume or expect students to learn through observation or imitation alone, the opportunity exists in small group instruction, where it does not exist in one-to-one instruction. Furthermore, group instruction provides an opportunity for peer interaction and peer reinforcement. Appropriate interactional skills can be strengthened within instructional groups. Teacher attention and the delivery of reinforcement can be made contingent upon attention to peers and/or teacher even when a student is not being directly taught.

With the recent emphasis on movement to less restrictive environments, it is even more important that SPH students be provided with group instructional experiences. If a child has been trained solely in one-to-one instructional sessions, it cannot be assumed that s/he will be able to perform adequately in a group setting, no matter how well s/he had previously been performing. It would not be at all surprising to hear that an SPH student, who had been referred to a less restrictive educational environment, failed because s/he had not acquired the skills to work in groups.

Group instruction requires that each group member learn to take turns, to wait and remain quiet while others respond and, perhaps, to raise his/her hand and wait for acknowledgement prior to responding. Without adhering to these basic rules, group instruction would become chaos. Providing SPH students with experiences in groups and directly teaching the behaviors required of group members would maximize the chance for a successful transition into a less restrictive instructional setting.

It is also very unusual to find a classroom that has a staff to student ratio which permits continuous one-to-one instruction. Therefore, it is unrealistic to plan a daily educational schedule for SPH students which does not incorporate frequent small group instruction. As was stated earlier, each period of the educational day should be planned for with specific instructional objectives and activities. At no time should a student be neglected without an educational plan while other students are being instructed. Therefore, unless there is a one-to-one staff to student ratio, a teacher must incorporate small group instruction.

Small group instruction does not, however, imply that all students within a group must be working on the same skill. Individualization within the group is most appropriate. Each student should have his/her own specific objectives which may or may not be the same as the other students within that group. In order to successfully orchestrate this type of group activity, the teacher must plan ahead and prepare what s/he is going to do. Although it may take time to develop effective group instruction, we feel it is well worth the time and effort when considering the potential benefits.

Instructional Cue Hierarchy

An important goal of any instructional program for SPH students is to teach the student to respond to natural environmental cues. However, educators cannot assume learning will occur merely by exposing an SPH individual to a task or an instructional setting. Instead, educators must systematically plan for skill acquisition as well as the maintenance and generalization of newly acquired skills to an individual's natural environment. A major component of a systematic instructional program is the application of specific prompting procedures which maximize student

independence while minimizing errors in an instructional interaction. Establishing an instructional cue hierarchy which emphasizes the use of the least intrusive prompt will foster independence while encouraging success.

Instructional cues or prompts are those extra stimuli that are provided in instructional sessions which facilitate a student's correct responding. For example, when instructing a child to "Sit at the back of the room," a teacher may accompany the instructions with a gesture or point toward seats at the back of the room. This gestural cue is considered an extra stimulus or prompt which facilitates the student's correct responding.

The types of effective instructional cues/prompts can vary from individual to individual and task to task. Instructional cues range from the least intrusive verbal prompts (providing extra verbal instructions) to gestural (e.g., a point or nod) or model (i.e., demonstrating the skill for the student) to the most intrusive physical prompts which involve manually guiding the learner through the desired task. A general rule for selecting prompts for an individual learner is to select the least intrusive prompt that will result in an individual student's success. However, it is imperative to carefully consider methods of fading the prompt once correct responding, with the added cue, is consistently occurring.

One method of fading added cues without having to directly withdraw assistance is to always allow the learner an opportunity to initiate or perform a task independently or at a lesser prompt level (e.g., verbal before gestural before physical) regardless of the intrusiveness of the prompt required for success. For example, in many schools a bell rings to signal the beginning of the lunch period. However, it may require a number of trials and systematic prompting procedures to teach an SPH

student to respond to the bell as an environmental cue. One method of prompting a response to the bell might include the entire range of prompts. After the bell rings, the teacher might wait for a specified period of time (e.g., 3 seconds) to see if the student will initiate independently, going to lunch. If the student does not respond within the time alloted, the teacher might verbally prompt (e.g., "The bell rang. Go to lunch.") If still no response (within 3 more seconds), a gestural prompt paired with the verbal prompt can be used (e.g., point to the lunch area while saying), "(student), go to lunch." If the gestural prompt is ineffective (within 3 seconds), the teacher should repeat the verbal prompt while physically guiding the student through the response (with as little physical contact as possible). Reinforcement should be provided once the response has been completed regardless of the degree of prompt necessary.

When the student initiates an incorrect response, the teacher should prevent the error and proceed to a more intrusive prompt to aid correct responding. This system would allow independence while minimizing errors, and has a "built-in" method for fading. As the student becomes more proficient at the response s/he will frequently perform the task at a lesser prompt or even an independent level.

Regardless of the method of prompting used, a teacher should specify in writing the procedures s/he intends to employ. Time periods allowed for responding should also be specified so as to promote consistency in teaching. By carefully selecting and employing systematic prompting procedures, a teacher will effect change most rapidly with his/her students. Learning will occur within an instructional session that is positive for both the teacher and student.

Integrated Therapy

Severely handicapped individuals require a variety of special services (e.g., physical therapy, speech therapy, and occupational therapy). The traditional method of delivering these services is to remove the individual from the ongoing classroom activities and provide the special service in an isolated therapy room. The individual sessions typically last between 10 and 30 minutes in length and are conducted one to three times a week. With the severely handicapped, short therapy sessions which occur infrequently are insufficient to effect significant behavior change and are also an inefficient use of specialist staff time.

The integrated therapy model (Sternat, Messina, Nietupski, Lyon, and Brown, 1977) is a more effective and efficient model for delivering special services to the severely handicapped. In this model, the specialist is heavily involved in an inservice role, teaching classroom teachers, aides, and parents how to conduct and integrate therapeutic activities within regularly scheduled events. For example, the speech therapist may provide directions to classroom personnel and parents regarding how to encourage spontaneous request behavior during snack and meal time. By teaching a variety of persons to carry out needed special programs and by integrating these activities throughout a student's day, the skill development of severely handicapped students may be significantly improved.

Whenever the specialist person is involved in a direct therapy role, these activities should take place within the classroom. This practice minimizes the chances that the therapist will work on immediately useful skills and that other staff will learn how to better carry out these special programs in the therapist's absence.

Interaction with Nonhandicapped

Public Law 94-142 requires that all handicapped individuals be provided with an appropriate education in the least restrictive environment. According to Gilhool and Stutman (in press), the intent of this law was that handicapped persons must be educated with nonhandicapped individuals to every extent possible. For the mildly handicapped, this may involve mainstreaming into some regular classrooms, while for the severely handicapped, this implies that self contained classes should be located within regular public schools.

Interactions with nonhandicapped persons can take many forms and be of varying degrees. Brown and his colleagues (1979) delineated the following levels of interaction: a) proximal, b) helping, and c) reciprocal. At a minimum, severely handicapped students and nonhandicapped persons should be involved in proximal interactions. Proximal interactions are those that place severely handicapped and nonhandicapped individuals together in common locations. For example, riding the school bus, school assemblies, recess, and eating lunch are all activities that can be engaged in together if the severely handicapped attend the same schools as their nonhandicapped peers. Helping interactions are those in which the nonhandicapped students assist handicapped individuals in various activities such as moving to and from activities, feeding, dressing, playing games, etc. These helping interactions can be informal and unstructured or can be more systematic in nature (e.g., tutorial interaction). The third type of interaction identified by Brown et al., (1979) was the situation in which both the handicapped and nonhandicapped students receive some reciprocal benefit from being with each other over and above the helping relationship. Playing a

mutually enjoyed game and voluntarily attending a social event together are examples of reciprocal interactions.

In addition to legal and philosophical arguments in favor of encouraging these interactions, there are some data which support the position that handicapped individuals emit more advanced skills when in association with non-handicapped (Peterson and Haralick, 1977). These interactions may also benefit the nonhandicapped by sensitizing these persons to handicapping conditions. More inservice efforts should be directed toward preparing regular educators and students for increasing interactions with the severely handicapped. As school based interactions are established, there will be greater opportunity for meaningful interactions to occur within neighborhoods and other community settings.

Data Collection and Charting

Data collection and charting of program results are essential components of systematic instruction practice with severely handicapped learners. These skills are needed to accurately assess a student's level of functioning prior to initiating an instructional program. Once a program has been initiated, data collection and charting enable the teacher to make program revisions and/or decide when a student has met criterion.

Prior to initiating an instructional program, a baseline assessment should be completed to determine each student's entry level into a particular program. Standardized assessments are frequently insufficient in detail to provide a teacher with information on where to start a student in a given program. On the other hand, task analytic assessment (Knapczyk, 1975) is one method of data collection that has proven use-

ful in determining where to start a person in an instructional program. In order to complete a task analytic assessment, all of the component skills of a behavioral objective are identified and listed in serial order from top to bottom on a recording sheet. Situations are then structured in which the teacher systematically observes a student's performance on each of these component skills.

After a program is started, data collection and charting should continue on a regular basis, preferably daily. The continuous documentation of student performance enables the teacher to make ongoing program decisions. For example, if a student is not making progress, the teacher may decide to alter one of the following aspects of the program:

1. Task presentation (e.g., teacher may need to break the task analysis into smaller component steps).
2. Teacher instructions (e.g., teacher may need to use different verbal instructions, more explicit modeled demonstrations, and/or greater physical assistance).
3. Response consequences (e.g., teacher may need to find a more effective reinforcer).

Although continuous data collection is preferred, other less frequent arrangements (data probes) are still very useful. However, data collection and charting should be due at least once a week for all programs. At first these behaviors may seem like a cumbersome addition to one's teaching practice, but the benefits of more sensitive decision making, greater accountability, and visual recording of student progress should begin to pay off for the teacher within a very short period of time.

Periodic Revision of the IEP

Although the law requires that an IEP be developed annually for each student, there are no provisions or guidelines regarding more fre-

quent periodic review. Thus without these guidelines, many program plans are developed once a year without any formal review occurring until the next year. This practice is inadequate for severely handicapped persons for several reasons, including the following: a) learning rates of individual students are highly variable, b) short term objectives may need to be revised, and c) program goals and priorities may change during a given school year.

At the beginning of each school year, an IEP should be developed for each student. This IEP should be formally reviewed and revised approximately every three months. As classroom teachers and other staff begin to consistently collect program data, the need for periodic IEP revisions will become even more clear. With a student's recorded progress or lack of progress as the focal point of IEP review meetings, programmatic revisions can be made which will facilitate a student's progress. The data which are recorded can facilitate periodic IEP revision.

Conclusion

Although these characteristics are by no means totally comprehensive for the ideal education for SPH students they do provide an important synthesis of what research and clinical practice tell us about effective programming for the severely handicapped. Clearly, work with families, materials development, and related services i.e. physical education are also necessary components of an appropriate yet innovative program. We feel, however, that a number of the characteristics described herein, especially in the area of age-appropriate functional activities, are

greatly overlooked as increased services are being provided to the severely handicapped. Hopefully, the present paper will help teachers decide on the critical parameters of their programs.

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ACQUISITION AND GENERALIZATION OF LEISURE SKILLS IN SEVERELY AND PROFOUNDLY RETARDED YOUTH: USE OF AN ELECTRONIC PINBALL MACHINE

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Acquisition and Generalization of Leisure Skills in Severely and Profoundly Retarded Youth: Use of an Electronic Pinball Machine

The development of chronologically age appropriate leisure skills for severely and profoundly handicapped (SPH) youth has received very limited attention from investigators, (Brown, Branston, Hamre-Nietupski, Pumpian, Certo and Gruenwald, 1979). Traditionally, recreation programs have focused on simple, repetitive arts and crafts activities (Amary, 1975) or skills such as doll play, block play, bead stringing, ball rolling (Whitman, Mercurio & Capronigi, 1970) which are not age appropriate activities when used with adolescents and adults.

The issue of chronological age-appropriateness has at times been controversial partly because of the difficulty in identifying skills which are consistent with SPH individuals' skill level (Wehman, 1976) and partly because some professionals feel SPH individuals should have freedom to use their leisure time in whatever way they see fit, even if the behavior is anti-social. The latter point, of course, raises the issue of whether SPH persons who rock all day long in a ward dayroom are in fact utilizing their free time in such a way as to be accepted in society. It also raises the issue of how SPH youth can ever be aware of the reinforcing aspect community-based recreation facilities without access to them (Ayllon & Azrin, 1968).

Consistent with age-appropriate leisure skill philosophy must be a commitment to community-based programs which reflect an <u>opportunity</u> for SPH individuals to interact with nonhandicapped peers. Recreation programs which only provide access to other severely handicapped people fall short of integration. Yet if severely handicapped individuals are to learn to enjoy the potentially reinforcing aspects of community recreational facilities, then training must take place in environments in the community.

Therefore, the present paper was developed in order to evaluate instructional procedures used for training leisure skills to four severely and profoundly mentally retarded males. Two studies were conducted. The first program was characterized by systematic instruction (Snell, 1978) in a closed setting initially i.e., the public school with frequent generalization probes into the community. In the second study, training repeatedly alternated between school and community environments. The skill involved in both studies was operating an electronic pinball machine, typical of the type found in most restaurants, lounges and hotels.

Study I

Method

Participants and Setting

The three participants, Stan, Ron and Ralph are black males, ages 14, 21 and 18. They have been classified profoundly retarded (Stan) and severely retarded with all measured IQ's below 30. None of these individuals are verbal and expressive communication skills were minimal although Stan and Ron were learning picture communication skills. Both Stan and Ralph regularly engage in self-stimulating behaviors. Ron would emit noises while placing his hands folded under his chin and Ralph would frequently rock rapidly back and forth and flap arms. Before this program was initiated none of these participants had ever seen an electronic pinball machine nor exhibited chronologically age-appropriate leisure skills.

The setting was in a public school for severely handicapped students in Richmond, Virginia. A cooperative relationship existed between the Richmond Secondary SPH project staff and public school teachers for program implementation.

The study also included generalization probes in community recreation settings (i.e., a local bowling alley with five pinball machines) during school hours.

Rationale for Skill Selection

Due to the efforts of the third author, a local restaurant donated an electronic pinball machine to the school. From an early point it was evident that pinball could be an excellent skill for leisure instruction due to: (a) the limited motor behavior required for operating the machine, (b) the age appropriateness of the skill, (c) the machine's availability in the community which accessed many new environments for the students, and (d) the reactive consequences of operating the machine itself. The successful demonstration of this machine in the community would present Stan, Ron and Ralph in a more positive light to nonhandicapped people as well, and hopefully, while displaying incompatible pinball behavior their inappropriate, self-stimulatory behavior would be minimized.

Task Analysis

A task analysis of pinball performance was developed and formed the basis for instruction. The task analysis provided a step by step sequence of how to operate an electronic pinball machine. The task analysis was modified and adapted to fit the particular pinball machine which was donated to the school project and to include steps necessary for playing pinball in the community for generalization purposes. The task analysis utilized can be found in Table I.

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Instructional Procedures

After a stable baseline was established, an instructional training step was selected for each student. The step was the first in the sequence in which the individual was unable to complete independently during baseline. All three

participants began instruction on step five based on baseline data. A 15-minute training session was begun each day by (1) a staff person first modeling or demonstrating entire skill; (2) and then instructing the participant on how to play pinball by providing repeated practice on the choosen training step(s). Usually five trials were given for each participant.

The teacher used an instructional cue hierarchy system (Alberto & Schofield, 1979; York, Williams & Brown, 1976) in which the teacher first waits for an independent response (participant self initiates and completes steps). If the response is not emitted the student is provided with the following levels of assistance, in order until the appropriate response is elicited: verbal prompting; staff modeling; gesturing from staff or physical guidance. Social reinforcement was delivered immediately upon the exhibition of the correct response when elicited through any level of assistance. Several different teachers were utilized for generalization. Each participant waited for his turn at instruction and did have the opportunity to watch his peer receiving training.

Behavior Observation and Reliability

Five training trials on the step targeted for instruction were given during a 15 minute instructional session on a daily basis. Once a week, however, non-reinforced probe data were then collected on the entire skill to monitor progress. A non-reinforced probe included the teacher giving a general cue "Stan, play pinball", followed by observation of student behavior in a step by step fashion. A plus was recorded if the step was completed correctly and a minus if not completed or if performed incorrectly. A percentage of steps completed independently was calculated after for each session.

A second observer also took data once a week during baseline and instructional phases to assess the reliability of measurement. Inter-rater reliability on this data ranged from .96 to 1.00.

Generalization Probes

As participants approached criterion, within the school setting, generalization probes were conducted at a nearby community recreation facility (i.e., a bowling alley with available pinball machines) during school hours on a weekly basis. Staff members demonstrated the skill, provided a verbal cue and waited for a response. Continuous verbal and social reinforcement was used after an appropriate response was made such as hitting a ball with the flippers. Correct or incorrect pinball steps were recorded and a percentage of correct responses was established for each probe as with school sessions.

Social Behavior Observation

During generalization probes in the community settings, it became apparent that two students, Ron and Ralph were attracting adverse attention from nonhandicapped consumers due to their exhibition of high-rate sterotypic behaviors. A momentary time sampling procedure was utilized to assess this second behavioral variable (i.e., their levels of appropriate versus inappropriate behavior while waiting their turn to play the pinball in a real community setting). Appropriate behavior during these samples was defined as: 1) standing still, 2) being quiet, (i.e., exhibiting zero sterotypic noise-making), and 3) looking in direction of pinball machine being operated or looking around area appropriately, (i.e., zero wall or shoe staring), and 4) arms could be crossed over chest or hands in pockets. The definitions of inappropriate behavior were individualized for each student. Inappropriate behavior for Ron included body rocking, roaming, fingers in ears, hands clenched together and held on upper chest, and noise making. Ralph's inappropriate behaviors were defined as flapping and clapping arms/hands, jumping up and down in place, body rocking, and hands stiffly extended and held around upper chest or face.

Forty momentary time samples were obtained during each session by a rater observing the student every tenth second for 240 seconds and determining whether the student was exhibiting appropriate or inappropriate behavior as defined above. The percentage of inappropriate behavior samples were calculated for each session. Inter-rater reliability ranged from .87 to 1.00 with a second rater.

Techniques to Reduce Inappropriate Responses in Public

As observation samples continued over numerous sessions, it became evident that the development of appropriate social behavior would also require intervention procedures. The program which was then initiated directly in the community setting consisted generally of helping the students to exhibit acceptable behaviors while waiting for their turn to play pinball. With the students the program was denoted as "how to look cool" and..."look cool" was the verbal cue used. This terminology was used because the inner-city students, even though non-verbal and severely retarded, seemed to be receptive to the term.

Staff and participants role-played at school using modeling and verbal prompting paired with social and tangible reinforcement at end of each practice session. Other practice sessions using the same procedures were given in the community setting with frequent verbal reminders to "look cool." Before a post-recording session, staff explained a contingency that if the student exhibited the appropriate "cool" behaviors while watching their friend play pinball, that the participant would receive tangible reinforcement (i.e., a coke). Data were then taken using the same time sampling method used during the previous non-intervention phase.

Experimental Design

A multiple baseline design across subjects (Hersen & Barlow, 1978) was employed to evaluate the program effectiveness of pinball performance with three subjects and increasing inappropriate behavior with two subjects. For pinball

performance, weekly non-reinforced probe data were collected through the course of the program. In this multiple baseline design, baseline procedures were initiated with all students at the same time; however, the implementation of instructional procedures was staggered across different points in time. With the three students, instruction first began with Ron, while baseline procedures continued with Stan and Ralph. As Ron's progress increased, Stan's instruction began and only Ralph remained in a non-intervention phase. Finally, as Stan acquired more training steps, Ralph's instruction began. Program effectiveness can be evaluated through this design if baseline data of non-intervention subjects remain independent of the progress seen in intervention phase subjects and as instruction is implemented with each student in turn, the same progress is observed.

The effectiveness of techniques to increase appropriate social behavior while waiting was also evaluated through a multiple baseline design across the two students, Ron and Ralph. That is, baseline samples were gathered on both students but intervention techniques were implemented with Ron only, for two sessions while observation samples were continued with Ralph. As Ron's behavior became more appropriate based on sample data, intervention was begun with Ralph.

Results

Figure 1 shows the baseline rates of pinball behavior remained stable or low prior to intervention for each student and increased proficiency can be seen in pinball performance as intervention was implemented in turn for Ron, Stan and Ralph.

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Figure 1 also shows data collected from generalization probes in the community setting. The first generalization probe for each participant shows a decrease in pinball performance compared to school performance particularly in Ron.

Variability is also seen in the data collected from the first several generalization probes and greater stability in the generalization data is seen after four or five community trips for all three students.

Figure 2 shows the secondary social behavior samples over the generalization

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sessions as well as several samples in the school setting after intervention had been implemented and stimulus control established. Clearly both students exhibited high rates of the defined inappropriate social behavior. Upon intervention Ron rapidly and markedly exhibited fewer inappropriate responses, thereby, exhibiting increased appropriate social behavior. While intervention was implemented with Ron, Ralph's behavior was simply observed for an additional two sessions. During those sessions, observations continued to show high rates of inappropriate behavior for Ralph. However, once intervention was implemented behavior samples of Ralph also showed rapid and continued reduction of inappropriate behavior in a public setting.

In the final four observation samples, students were observed back in the school setting under the same reinforcement contingencies. Samples showed that the exhibition of inappropriate behavior remained low for both young men in the school setting.

Study II

Method

Participant and Setting

Sam is a severely retarded nonverbal male who is 15 years of age. He is severely spastic, with limited use of one hand and exhibits an uncoordinated gait. Sam exhibits simple eating and dressing skills. His social behavior is frequently characterized by shrieks and noncompliance. Much of Sam's pinball training took place in the same public school setting described in the previous study; however, in order to increase the amount of training in the community,

instructional sessions alternated between the school and a local bowling alley which had pinball machines. This community training was also completed during school hours.

Instructional Procedures

The training procedure and task analysis utilized were identical to those described in Study I. The graduated cue hierachy of verbal cue, model and demonstration, and physical guidance were used depending on Sam's response level. Social reinforcement was delivered immediately upon successful completion of steps. Sam received approximately 10 - 15 minutes of training prior to a post-test on each step called a non-reinforced probe. As stated above, training and data collection occurred in school and in a community setting on an alternating basis, (i.e., one training day occurred in school and the next training day in the community).

Behavior Observation

Progress in pinball performance was assessed using non-reinforced probe data after a stable baseline of pre-intervention pinball skill was established. As in Study I, non-reinforced probe data consisted of observing which steps in the task analysis Sam could complete independently following the verbal cue, "Sam, play pinball." Data were collected after training in school and community setting. A percentage of steps completed independently was calculated after each session. Inter-rater reliability co-efficients with a second rater once weekly ranged from .96 to 1.00.

Experimental Design

An alternating treatments design (Barlow & Hayes, 1979) was used to evaluate the instructional program. This design has been used rarely to assess treatment variables across different environments but it lends itself to assessing generalization.

Results

Figure 3 shows data collected on Sam's pinball performance in each separate environment. Circled dots are school probes; non-circled dots are community probes.

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Sam demonstrated steady improvement in operating the electronic pinball machine in both environments as revealed in Figure 3 by an increasing proficiency over a total of 17 instructional sessions. It is of note, however, that both baseline sessions in the community and the first four community generalization probes after intervention showed lower performance on the pinball steps than seen in the school baseline sessions or the first five probes after instruction at school. Mean percentage of steps completed independently in both settings over all sessions also show higher performance in the school setting, ($\overline{X}$ School Baseline: 47%; $\overline{X}$ Community Baseline: 42%; $\overline{X}$ School Performance: 71%; $\overline{X}$ Community Performance: 70%). This trend appears less conspicuous as instruction in the two settings continues, in that, out of the final six probes, with three at school and three in the community, the three community probes are equal or higher than the school probes.

General Discussion

The present training program is only one indication of how a chronologically age appropriate leisure skill, in this case pinball, can be taught to severely and profoundly retarded adolescents. There are many other leisure skills such as bowling, football, and throwing darts (Schleien, Wehman & Kiernan, Note I) which also can be trained. These types of skills not only add appropriate leisure skills to the repertoire of an SPH youth, but also open up many new community environments which the student is now prepared to visit, equipped with some skill proficiency for partial or full participation in that setting.

There are several important aspects of these two studies which should be noted. First, the need for generalization training in the community is underscored by the examination of the results in both studies. In Studies I and II, skill performance, in general, was lower in the natural environment than in the school setting, perhaps due to the many situational distractors which could not be controlled. We also see, however, that with repeated exposure in the community, performance in controlled settings (i.e., school) and in a natural setting becomes most comparable (Neef, Iwata & Page, 1978). Secondly, as seen in Study I, generalization training in the community may more clearly emphasize to educators the need to begin dealing with secondary social behaviors and to examine measurement and manipulation techniques of such behaviors. For instance, in Study I, although skill performance was generalized to the natural environment with training, it was clear that the job of educating students to function adequately in that environment did cease at that point. Appropriate social behavior while involved in the task-oriented activity also had to be systematically approached. Third, both studies show that real community environments can be used effectively not only for a practice setting, but also for initial training environments. In Study I, for instance, control over inappropriate social behavior was obtained first in the community setting and then generalized to school. In Study II, although mean levels of performance were consistently lower in the real community setting, the differences between the performance in both settings were not great and eventually progress became equal in both settings.

It is also important to note the following general points regarding this work: First, the training techniques were empirically validated in experimental designs. Second, the classroom-community model described (Certo, Brown, Belmore & Crowner, 1977) was implemented and the logistical difficulties of

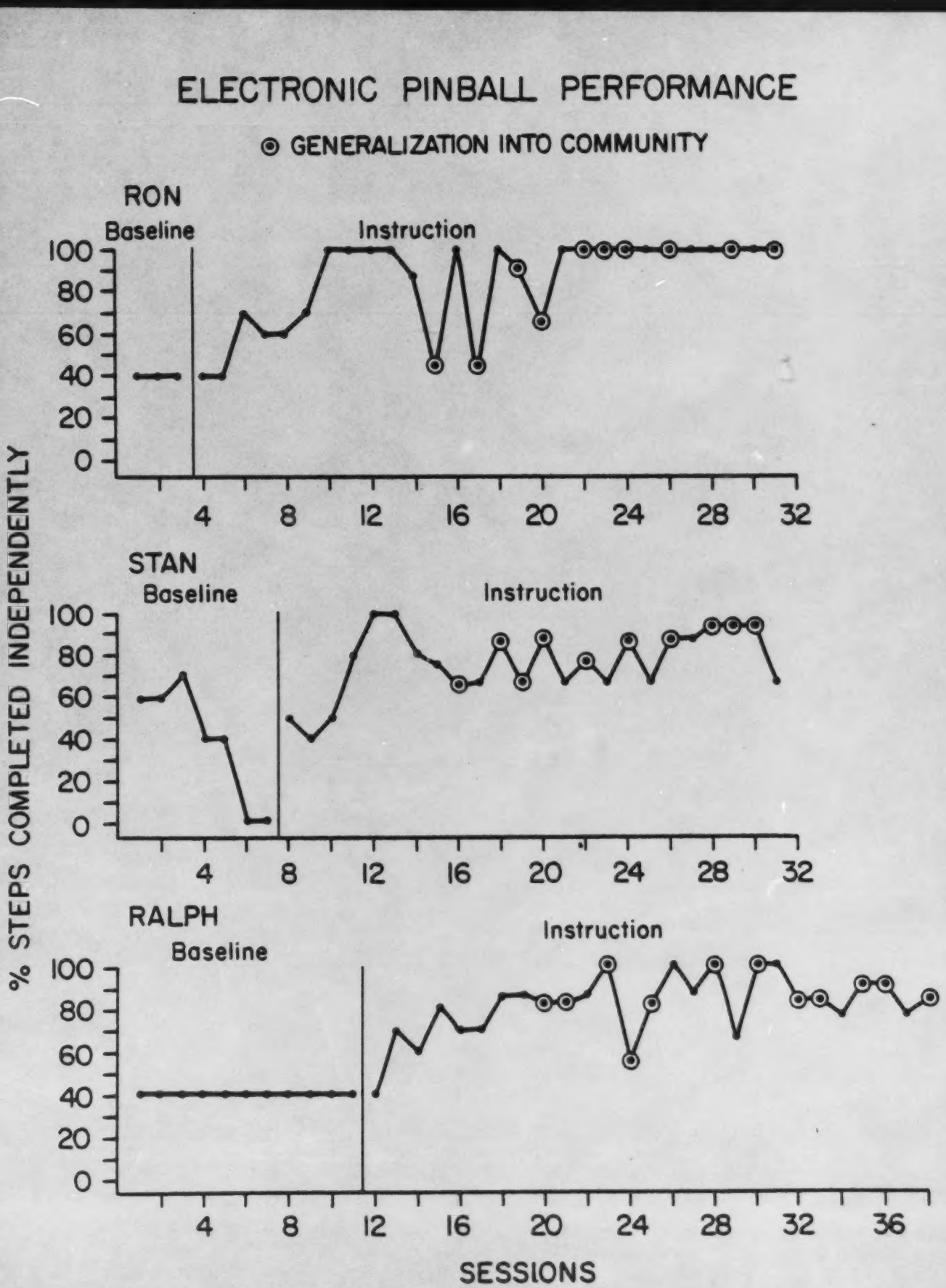
community-based programming were worked through. Third, the philosophical base of normalization was established through the selection of a leisure skill which is clearly age-appropriate for SPH adolescents and young adults.

Figure Captions

Figure 1 - Pinball Performance at School and in the Community for Three Students

Figure 2 - Secondary Social Behavior During Pinball Practice

Figure 3 - Pinball Performance Alternating Between School and the Community


ELECTRONIC PINBALL PERFORMANCE
◎ GENERALIZATION INTO COMMUNITY
RON
Baseline
Instruction
STAN
Baseline
Instruction
RALPH
Baseline
Instruction
% STEPS COMPLETED INDEPENDENTLY
SESSIONS
0
20
40
60
80
100
4
8
12
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28
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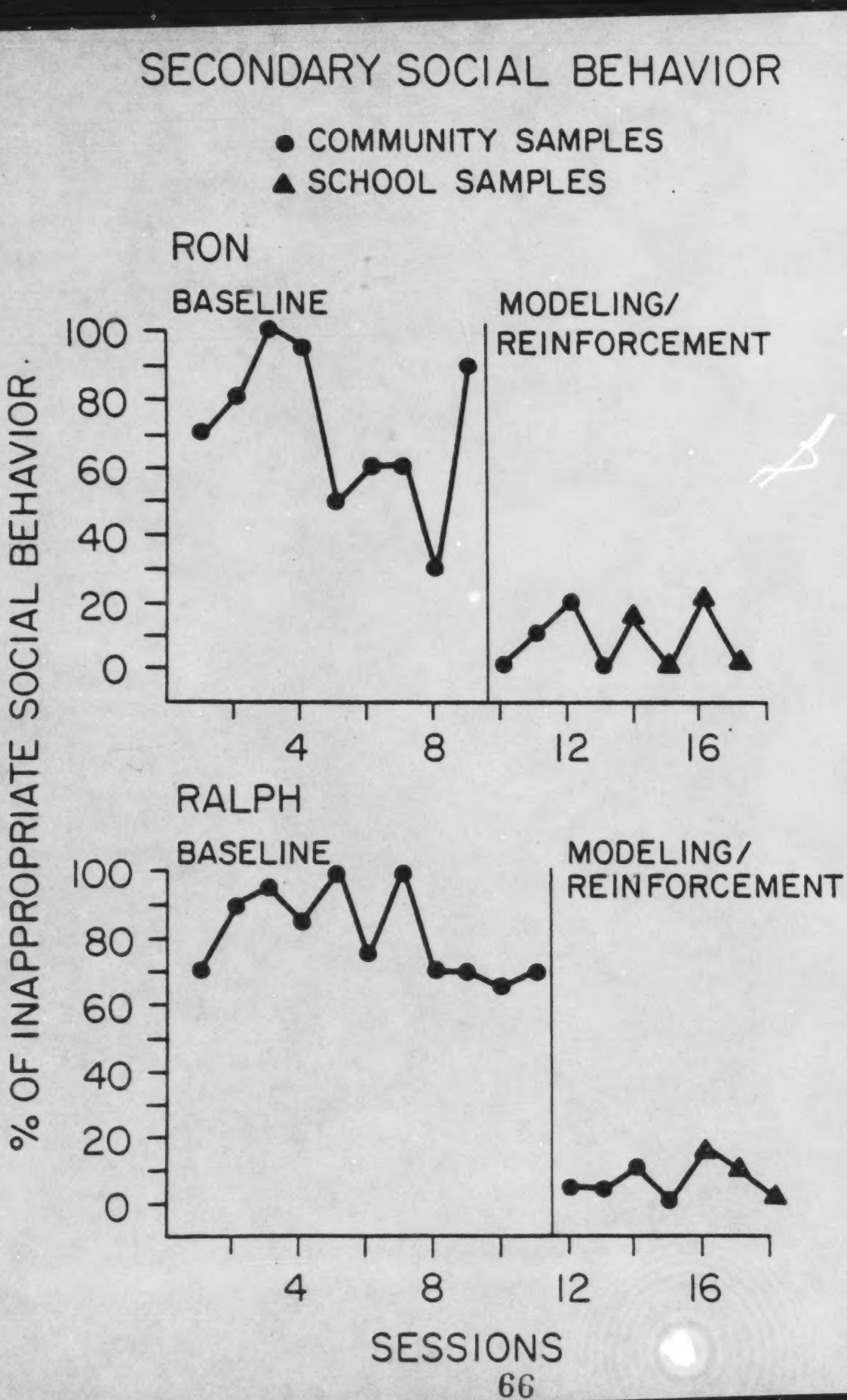
36


SECONDARY SOCIAL BEHAVIOR
● COMMUNITY SAMPLES
▲ SCHOOL SAMPLES
RON
BASELINE
MODELING/
REINFORCEMENT
100
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RALPH
BASELINE
MODELING/
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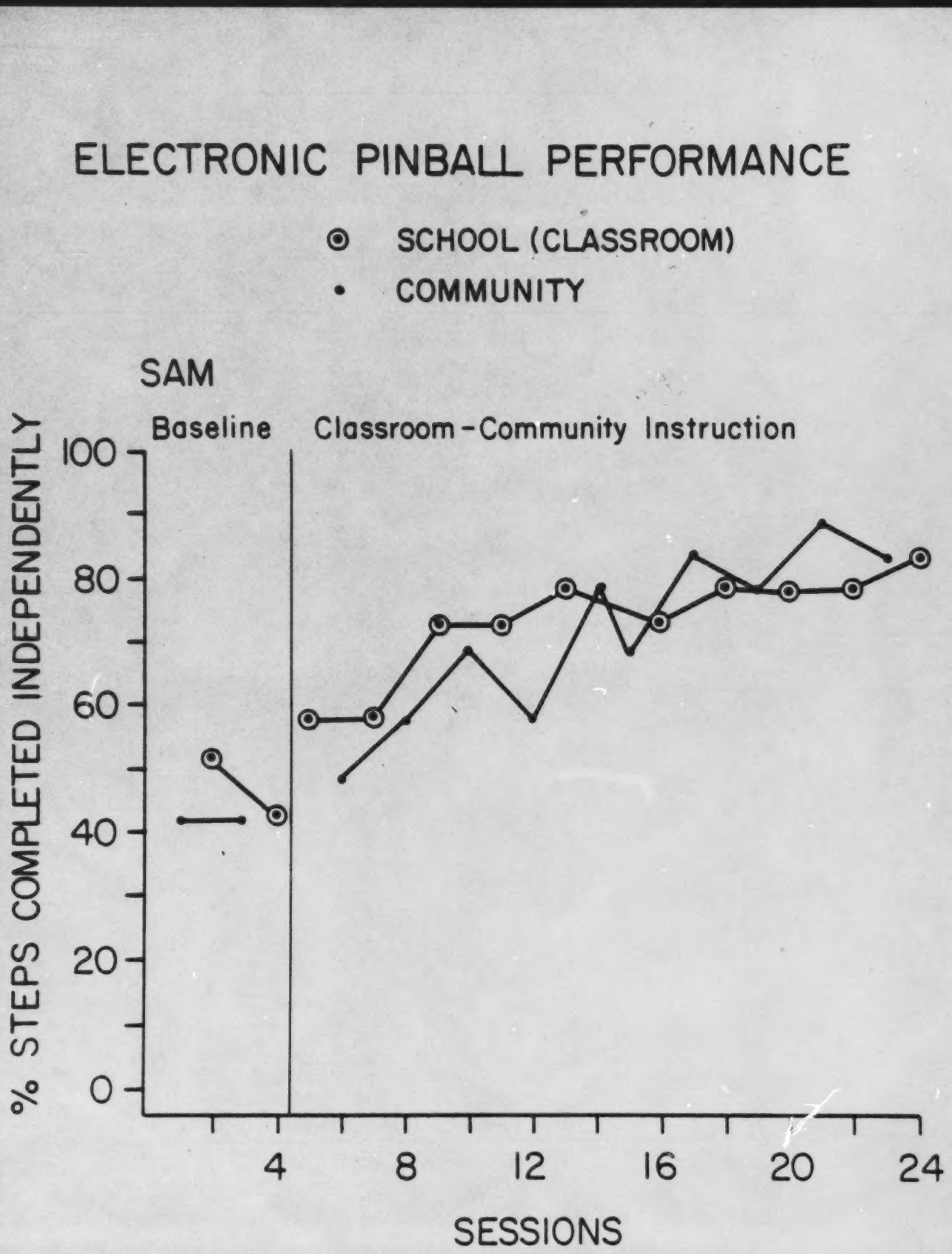
% OF INAPPROPRIATE SOCIAL BEHAVIOR
SESSIONS


ELECTRONIC PINBALL PERFORMANCE
SCHOOL (CLASSROOM)
COMMUNITY
SAM
Baseline
Classroom-Community Instruction
% STEPS COMPLETED INDEPENDENTLY
100
80
60
40
20
0
4
8
12
16
20
24
SESSIONS

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INTEGRATION OF SEVERELY AND PROFOUNDLY RETARDED YOUTH INTO COMMUNITY RECREATION PROGRAMS: A SOCIAL VALIDATION

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Integration of Severely and Profoundly Retarded Youth Into Community Recreation Programs: A Social Validation

One of the most exciting aspects of program development for severely and profoundly retarded individuals is facilitating their integration into community programs and facilities. A major problem facing educators in this area, however, is that most parents of severely retarded persons express a reluctance or inability to help their sons and/or daughters become involved in community activities. For example, there is usually some recalcitrance about enrolling a severely or profoundly retarded child into normal community functions such as Boy Scouts, church groups, or recreation classes. Participation in these type of social activities is typically characterized by special classes or programs for only handicapped persons. In fact, it is not uncommon for substantially handicapped individuals, such as the severely and profoundly retarded, to be excluded from these segregated programs.

If we are to reverse the perpetual cycle of parent reluctance to involve severely retarded youth into normal community activities, then it is crucial for teachers and administrators to lead the way in promoting community integration. To combat this cycle, we must first understand it. Parents who show a long history of isolating a severely handicapped child, as well as themselves, within the home often express fear of embarassment with their child in public and the consternation of previous rejection by the community in general. In addition, generally low expectations are held regarding the benefits to their child or to nonhandicapped people from greater community integration. The problem with this line of thinking is, of course, that the family is viewing integration from their vantage point only; the fact is that we simply do not know community attitudes regarding planned integration of severely handicapped people. It is probably safe to say that the vast majority of nonhandicapped people in this country have had minimal contact with severely and profoundly retarded individuals. In fact, many people are not even aware that individuals with such substantial social,

communication, and physical handicaps exist. Therefore, the reaction of the community toward social and physical integration of severely handicapped youth, must be examined. We assume that a social group of nonhandicapped teenagers would react unfavorably to the addition of one or two severely handicapped peers, but this may not be the case. Although, we can assume that a random "dumping" of severely retarded youth into community programs will be a predictable disaster, it is possible that individuals who are not at all educationally oriented may derive strong emotional reinforcement from interaction with severely handicapped people. The feelings and attitudes of nonhandicapped people must be examined objectively and this information then must be convened to parents and administrators in order that they may base their judgements on more complete information (Voeltz, 1980).

The present paper is directed toward describing a planned community integration process for severely and profoundly retarded youth (ages 10-21) emphasizing recreational and social activities with nonhandicapped individuals. In addition, survey data collected from the nonhandicapped participants involved in the program is reported and discussed. These data reflect the perceptions of nonhandicapped persons relevant to SPH youth as they emerge into the mainstream of the community.

Why Integrate Severely and Profoundly Retarded Youth Into Community Programs?

More than once the above question has been asked. To some parents, teachers, and administrators the integration issue is controversial. Our position is that merely living and attending school in the community is not sufficient. Handicapped individuals must have opportunities to participate in programs with nonhandicapped peers. Furthermore, participation may take different forms depending on the intensity of the student's handicap. High levels of recreational competence will not

be the critical variable but social acceptance will be. Social acceptance will be determined by the nonhandicapped peers. Two major reasons for community integration of the SPH population are described below.

Development of Appropriate Social Behavior

Severely and profoundly retarded youth will not learn acceptable social skills and may exhibit inappropriate behavior excesses i.e., running down the hall, bizarre giggling, inappropriate hugging, public masturbation, hand flopping, unless there is a consistent presentation of appropriate peer models (Snyder, Apolloni, and Cooke, 1977). We have found, for example, that many severely retarded individuals will markedly reduce sterotypical behaviors upon placement into an environment where these behaviors do not occur. One such student, exhibited a nearly continuous moaning response during time sample observations at lunch in a segregated setting, whereas during samples taken with an EMR high school group the behavior was observed below 20% of samples during several sessions. For other SPH students, behavioral contingencies will be needed to reduce these common behaviors.

Increase in Range of Experiences

Community-based leisure and social programs for nonhandicapped people usually provide for a greater array of activities than the ones which have been identified as being appropriate for severely retarded individuals. For example, playing pinball in a local restaurant is not an activity usually planned for severely retarded individuals because they have not typically been viewed as having the necessary competency. Unfortunately, this expectation is a self-fulfilling prophecy which effectively omits severely retarded persons from experiencing this opportunity.

Community-Based Recreation: The Range of Options

There are numerous options or resources available for integrating severely and profoundly retarded youth into community-based recreation and social programs. These include participation in scout groups, evening recreation classes, team sport participation in practice sessions, generalization training in age-appropriate community leisure skills such as darts, pinball, bowling, attending dances, spectator sports and movies. In the first year of the Richmond Secondary Project for Severely/Profoundly Handicapped we have been involved with integrating youth into selected activities. Below is a brief report of the logistics and rationale for selection of an activity, the positive impact which has accrued, and the problems encountered.

Planned Integration

Participation in Scout Groups Scout troops provide a readily accessible resource to begin community integration with SPH young adults. In general, troop leaders are open to the concept and since many activities are sedentary, multiply handicapped and nonambulatory students can also be mainstreamed into the group. Contact should be made with the general scout association who will provide names of leaders in the selected student's neighborhood. Attending a meeting prior to the handicapped student's first meeting to orient participants and leaders is advised. Special emphasis should be placed on treating the handicapped person as a young adult.

During mainstreaming efforts, the type of social interactions occurring between the handicapped persons and nonhandicapped should be closely examined. If the interactions which occur remain on a greeting-type or instructional-type level only, some intervention may be needed to encourage and reinforce higher

level social interactions. Figure 1 presents observational data on the interactions in a mainstreaming program with two handicapped girls in separate

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scout troops. Aileen, a profoundly, multiply handicapped adolescent girl, was involved in a regular girl scout troop with nonhandicapped girls ranging in age from 13-18 years old. Fortunately, no intervention was required with this troop in that social interactions developed naturally during the second meeting and rose to a higher level by the fifth meeting. Social interactions now occur readily.

Figure 1 shows the number and type of interactions initiated by nonhandicapped participants per scout meeting for the first seven meetings. These interactions were greetings, instructional interactions, and social interactions. Greetings were defined as a hello, good-bye or waving response. Only one hello or good-bye response was counted per person. An instructional interaction consisted of a verbal and/or physical response to assist the handicapped student in participating in the activity occurring. Only one instructional response was counted for the entire interaction between the handicapped person and a nonhandicapped person on a particular instructional point for five minutes or two seconds until the interaction ceased for a 20 second period. That is, an instructional interaction consisted of a nonhandicapped person coming in close proximity to the student and helping her in some way. As soon as the physical or verbal help ceased for a 20 second period, the interaction closed. If after the 20 second period, the interaction resumed, it was counted again as a second instructional response. Social interactions were defined as saying or asking something unrelative to the activities or to greetings which was not considered harrassment. If the social interaction ceased for a 20 second period and resumed again, two responses were counted. Harrassment behavior

was observed as well; however, no harrassment interactions have occurred to date.

In another girl scout troop with a different student, Joan, intervention was required to develop greater social and instructional interactions. This determination was made by the troop leader as well as project staff. The troop leader, in particular, desired that the nonhandicapped girls participate in pushing the student's wheelchair on field trips and speak directly with the student even though she is nonverbal. Various forms of intervention were discussed; however, the troop leader preferred to have a private meeting with the nonhandicapped scouts to discuss the situation. Figure 1 also shows the interaction data from this troop. The types of interactions were defined in the same way as with the previous troop. The handicapped student in this instance, however, was less motorically involved than Aileen as she exhibited full use of arms and hands, showed outgoing social behavior and approximated some words such as "hi", "bye", etc. Data represented in Figure I clearly show increases in social and instructional type interactions following the troop leaders intervention and the nonhandicapped girls have not appeared to resent the "lecture" they received.

Inter-rater reliability coefficients ranged from .89 to 1.00 from both troops. Boy scout troops require more physical behavior in the part of the student due to the nature of the traditional activities. However, only partial participation is required to begin and sustain interactions with handicapped people.

Scout troops, in general, provide, perhaps one of the fun areas where the trainer-advocate could eventually be fully faded from the situation. Parents would only be needed for transportation, thus, it may be a situation where a severely retarded person could function independently with nonhandicapped peers.

Attending a Community Recreation Class

Locally operated recreation classes for adults provide another resource for community integration of severely retarded young adults. These could include dancing, exercise, painting, ceramics, weaving, etc. Classes are located at "Y's" or recreation centers in most neighborhoods. Instructors requiring a minimum enrollment will usually welcome another student especially when accompanied by a special trainer. Contact with the instructor should be made prior to the first class to describe the student's abilities and liabilities and the concept of partial participation (Brown et al, 1979). During the classes, modeling and advocacy is utilized to reduce apprehension in the nonhandicapped participants and provide information.

We have found that workshop-type classes such as ceramics provide an excellent opportunity to integrate students who exhibit some aberrant mild sterotypics. During such classes, most participants are highly involved in their own projects; therefore, their attention is not focused directly on their fellow classmates or the instructor.

One profoundly retarded 20 year old woman was integrated into this type of class for a four week period, one evening a week. Margot was ambulatory, nonverbal, frequently noncompliant, and exhibited sterotypic moaning responses at high rates. Margot generally refused to participate in any type of programming, including even eating her lunch at school, without frequent physical prompting. The objective of the integration effort was to observe her behavior outside of the segregated school environment where she was exposes only to students younger than herself and also significantly handicapped. It was believed that when exposed to a group of nonhandicapped adults absorbed in personal projects, that she would self-initiate some participation in a project and exhibit fewer

stereotypic responses. To illustrate the lack of nonhandicapped participant attention focused on Margot within this type of class situation, Figure 2 shows

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the percent of samples in which Margot exhibited stereotypic moaning responses per session. Data were collected through a simple momentary time sampling procedure, through which, every 10 seconds, the rater looked up at Margot and determined whether or not she was moaning/breathing heavily for that second only. Twenty time samples were collected per session and two observation sessions were collected during each of the four classes. Inter-rater reliability was established with a second rater at 1:00. Although some minor improvement may be seen in Margot's behavior over the sessions, Margot after a long history of segregation from the community, appeared anxious in the new environment and continued to exhibit high rates of the stereotypic response. The importance of these data is that these responses did not disturb the class appreciably. It was observed that during the second class, the instructor brought a radio to play in the room but no complaints were issued by any participant. As will be seen in the next section, the attitudes of participants and instructors were also surveyed and show strong agreement with the concept of integration even with an individual exhibiting these types of behaviors and low rates of on-task behavior.

Use of Pinball Machines in a Public Bowling Alley

Skill selection of age-appropriate leisure training is integral to community integration efforts. If large amounts of school time are spent on craft-type skills to the exclusion of skills such as pinball, which can be generalized into the community, the options for different environments in which the students can be integrated are limited. Obtaining a used pinball

machine and teaching this relatively simple task during breaks or structured leisure time in school, opens up several community environments in which integration can take place near the school or the home. Management and consumers within the pinball environment are accustomed to adolescent-type horseplay; therefore, the situation provides room for social error as well as an environment in which structured training of leisure and social behavior can take place. Real community settings can not only be practice environments but also initial instructional environments. For instance, simple intervention strategies can be implemented to increase appropriate behavior (e.g., posture) or reduce sterotypic behaviors in public. Figure 3 shows observational data

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collected on two students who exhibited high rates of inappropriate behavior while waiting for their turn to play pinball. Again, a momentary time sampling procedure was utilized in which the rater looked at the student every tenth second during the waiting period and determined the appropriateness of the student's behavior for that moment only. A plus was recorded for appropriate behavior when the students: 1) were standing still, 2) hands and arms down or hands in pockets and 3) were looking in the direction of the pinball machine. A minus was recorded when students were emitting any type of noise making responses, rocking responses, or when their hands were positioned in a sterotypic fashion around the face or upper chest. Inter-rater reliability ranged from .93 to 1.00 with a second rater. Since these types of inappropriate behaviors tended to bring adverse attention to the students, intervention was initiated. Teaching consisted of simply modeling the appropriate behavior and allowing repeated practice with the verbal cue "...Be cool". The potential reinforcement (i.e., a coke) was also shown to each student prior to the time sampling procedure. Figure 3 shows rapid decreases in inappropriate behavior

samples first for Ron as intervention was initiated. Ralph, the second student's inappropriate responses remained at high levels while intervention was put into effect for Ron but not directly implemented with him during the 12th session, the inappropriate behaviors decreased to a near zero level.

The decrease in inappropriate behavior also generalized back to the school leisure area as seen in Figure 3. These data show that both teaching and learning can occur effectively in real community settings.

Visiting a Fast Food Restaurant

Eating at fast food restaurants is a behavior which is so ingrained in our society, it too is an appropriate teaching environment. Teaching some or all of the steps involved in going to a fast food restaurant will usually be viewed as a most functional/practical skill area by parents and other family members. In addition, families may be more interested in participating in maintenance training in this setting, thereby, increasing their role in the community integration process of the student.

Figure 4 shows efforts to assist one young man in ordering his lunch

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through the use of picture communication cards at several of these restaurants. Progress was slower than expected largely because the nonhandicapped waiters tended to look toward the trainer for instruction rather than the trainee. Also, the student often did not push the card far enough over on the counter or wait for cashier to understand the order. Some cashiers had to fumble for their eyeglasses and early in training, to our chagrin, some students rather than waiting preferred to grab the food items for themselves.

Perceptions of Nonhandicapped Individuals

Purpose of Social Feedback

Although the aforementioned experiences appear to be beneficial for the severely and profoundly retarded youth who have been involved, it is also crucial to assess how the nonhandicapped individuals perceive their participation (Kazdin, 1977; Wolf, 1978). In order to evaluate community receptivity to the integration efforts which have taken place to date, a social feedback scale was designed. This scale is presented in Table 1.

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The items were developed according to three objectives: 1) to assess the feelings and attitudes of nonhandicapped persons who interacted with or have been in close proximity to a severely/profoundly retarded person for the first time in their lives, 2) to examine whether the environment was accepting of the handicapped individual based upon nonhandicapped persons judgement, and 3) to determine whether the concept of normalization (i.e., that the handicapped should interact with nonhandicapped and can benefit from these experiences) was a commonly held notion to the nonhandicapped individuals surveyed. It was believed that this information was unretrievable prior to our planned integration efforts due to community's lack of experience with the SPH population, in general. In addition, it was hoped that such information whether positive or negative would have direct impact on the restrictive-type programming prevalent in the education of the more severely handicapped.

The social feedback scale was administered to nonhandicapped individuals randomly during community visits to all of the environments described above and was administered only once to a given nonhandicapped person. The scale therefore, was filled out by adolescents (e.g., from Boy Scouts and Girl Scout activities) and adults (e.g., from participation in community recreation programs

such as ceramics classes or from fast food restaurant consumers/staff). Only two individuals refused to fill out the form and these were staff at a local bowling alley. Nonhandicapped people were given a folded form and told simply that we wanted their honest feelings about the program. When completed, they were asked to fold the form and return it to the special trainer. A total of 19 forms have been completed. Of the 19 respondents, 10 were adults and nine were teenagers (at least 13 or older). All had been exposed to a severely or profoundly handicapped person for at least two hours but no more than approximately 10 hours. The scale itself was designed to insure a response-level change, that is, all items required a level of agreement for a response but three statements were written in the negative and three in the positive. Therefore, respondents could not simply agree with everything asked and still express consistent attitudes on the scale as a whole.

Results from Social Feedback

To date, results have been strongly encouraging. Table 2 provides a sum-

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mary of the data on each item. No significant differences were found in the data collected from the different environments described above; therefore, all data are summed. Means and response ranges are presented. Mean responses to item 1 indicates that the SPH group is, indeed, a highly visible group during integration trials in the community. Strong disagreement to item 2 shows that of the individuals we surveyed the belief that a handicapped person, no matter how handicapped, has a right to participate in these community activities was firmly held. Responses to items 3 and 4 indicate that the nonhandicapped participants and instructor types believe that a severely handicapped person can benefit from a community activity and can benefit from being in a group of nonhandicapped people. Strong disagreement on item 5 shows that the respondents

believed that they could somehow benefit from being around the handicapped student and his teacher and unexpectedly, responses to item 6 show that the surveyed individuals were generally comfortable with a significantly handicapped person near them.

Concluding Remarks

The above data began to illustrate the generalized receptivity on the part of the community that has been experienced during our community integration efforts. It is imperative, however, that a much larger sample of citizens in the community be sampled over the next several years before we draw any firm conclusions. The difficulties we have experienced in efforts with SPH students in implementing the classroom community model have largely been due to logistical problems and reluctance on the part of people who know this population the best: project staff, parents, teachers and administrators. Understandable concern for safety and inexplicable fear of embarrassment and rejection are reasons behind many of our decisions to continue restrictive programming for SPH persons. However, actual program experiences and the survey data described in this paper illustrate that the community may be more receptive to the severely and profoundly handicapped than previously believed.

Table 1

Social Feedback Scale

Richmond Secondary SPH Project

Circle the number which most closely corresponds to your belief. Please give us your honest opinions or feelings. When completed, please fold in half and return to the special trainer.

1. I have noticed a handicapped person in my recreation class or activity group.

1	2	3	4	5	6	7
Strongly Disagree	Moderately Disagree	Slightly Disagree	Undecided	Slightly Agree	Moderately Agree	Strongly Agree

2. I do not feel this handicapped person has a right to come to this class or group.

1	2	3	4	5	6	7
Strongly Disagree	Moderately Disagree	Slightly Disagree	Undecided	Slightly Agree	Moderately Agree	Strongly Agree

3. I think this person can benefit from this class if he/she has a special teacher with him/her.

1	2	3	4	5	6	7
Strongly Disagree	Moderately Disagree	Slightly Disagree	Undecided	Slightly Agree	Moderately Agree	Strongly Agree

4. I do not think this person can benefit from being around a group of nonhandicapped people like our class or group.

1	2	3	4	5	6	7
Strongly Disagree	Moderately Disagree	Slightly Disagree	Undecided	Slightly Agree	Moderately Agree	Strongly Agree

5. I do not think I can learn anything significant about handicapped people from this person and his/her teacher being in my class or group.

1	2	3	4	5	6	7
Strongly Disagree	Moderately Disagree	Slightly Disagree	Undecided	Slightly Agree	Moderately Agree	Strongly Agree

6. I feel comfortable with this person in my class.

1	2	3	4	5	6	7
Strongly Disagree	Moderately Disagree	Slightly Disagree	Undecided	Slightly Agree	Moderately Agree	Strongly Agree

COMMENTS:

Figure Captions

Figure 1 - Social Interaction Initiated by Nonhandicapped Scouts

Figure 2 - Noise Making Responses During Nonhandicapped Recreation Class

Figure 3 - Social Behavior During Pinball

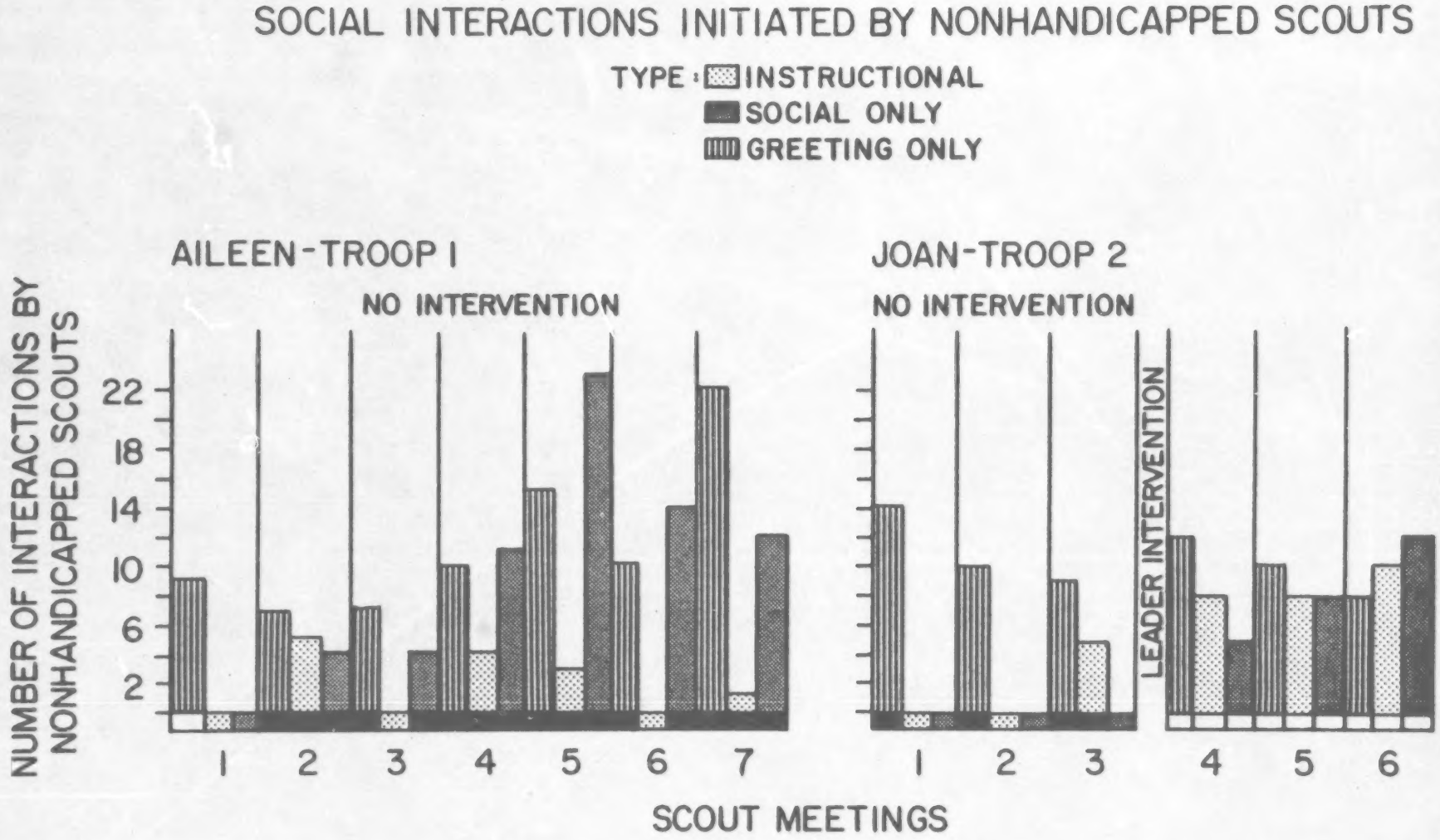
Figure 4 - Ordering at a Fast Food Restaurant

TABLE 2

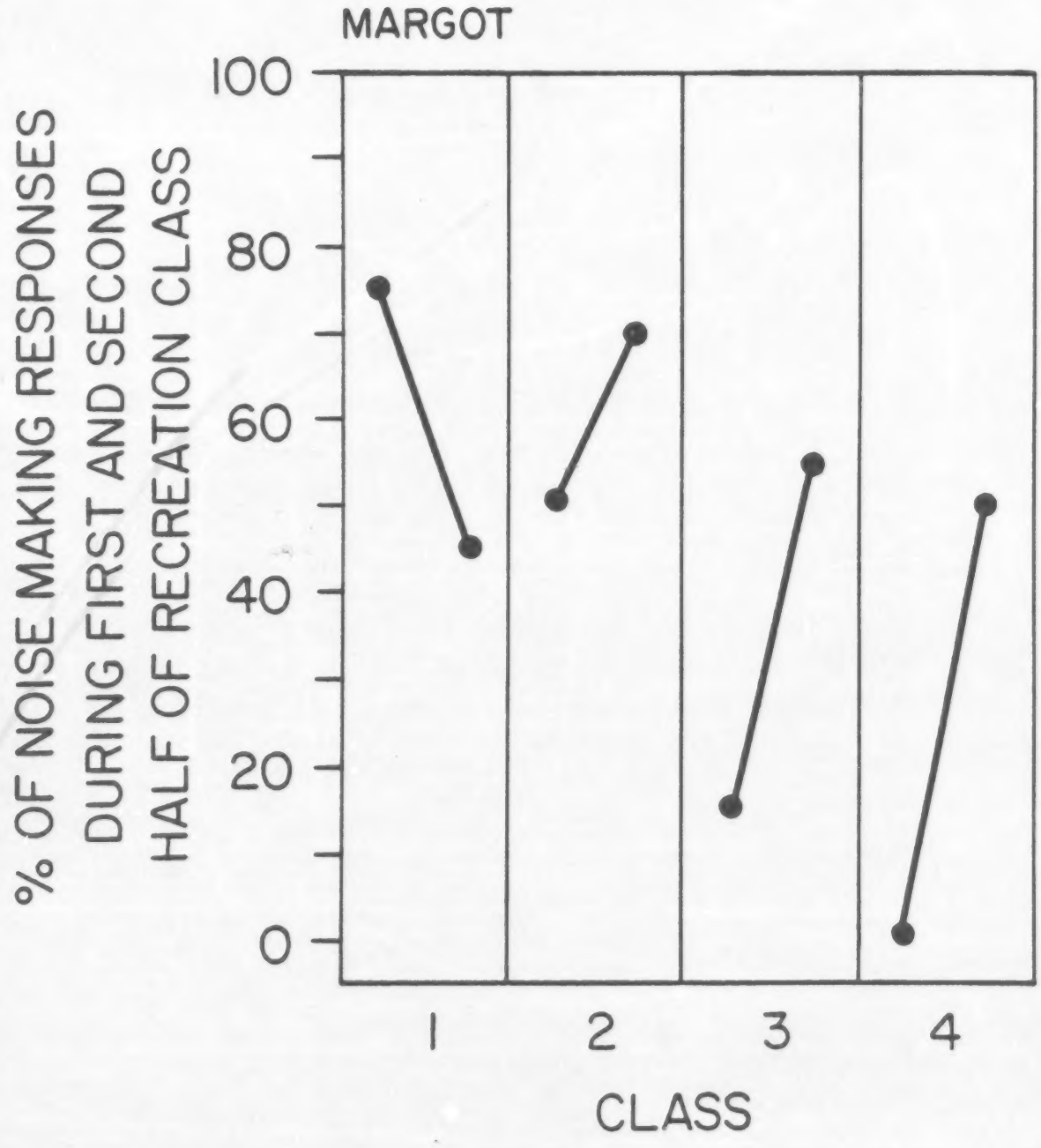
Perceptions of Nonhandicapped Individuals of Severely/Profoundly Retarded Youth Involved in Community Recreational Activities[1]

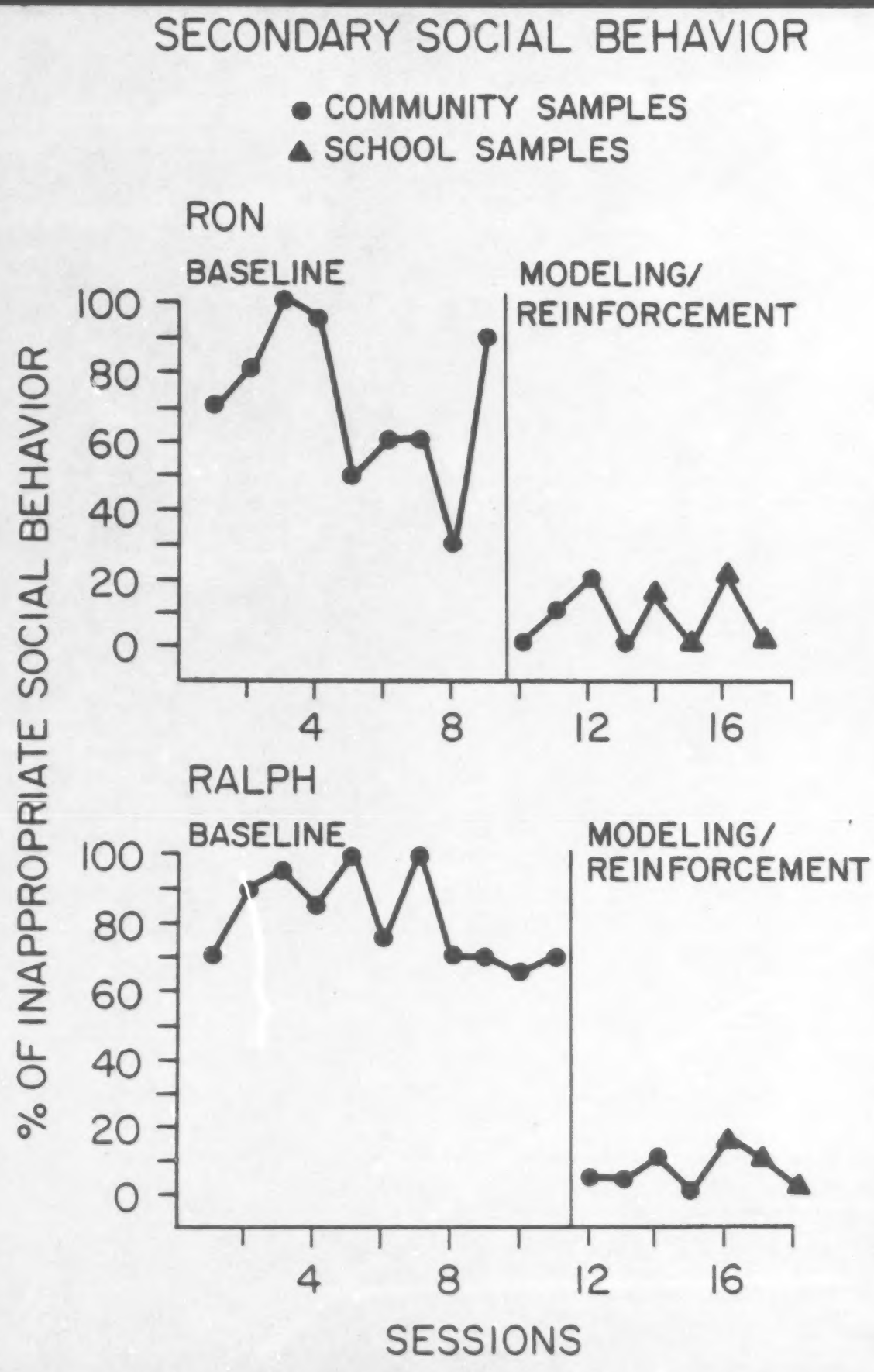
		$\bar{X}$	Range of Responses
1.	I have noticed a handicapped person in my recreation class or activity group.	6.21	3 to 7
2.	I do not feel this handicapped person has a right to come to this class or group.	1.11	1 to 2
3.	I think this person can benefit from this class if he/she has a special teacher with him/her.	6.17	4 to 7
4.	I do not think this person can benefit from being around a group of nonhandicapped people like our class or group.	1.53	1 to 4
5.	I do not think I can learn anything significant about handicapped people from this person and his/her teacher being in my class or group.	1.58	1 to 5
6.	I feel comfortable with this person in my class.	6.21	3 to 7

[1] A seven indicates strong agreement with statement.
One indicates strong disagreement with the statement.

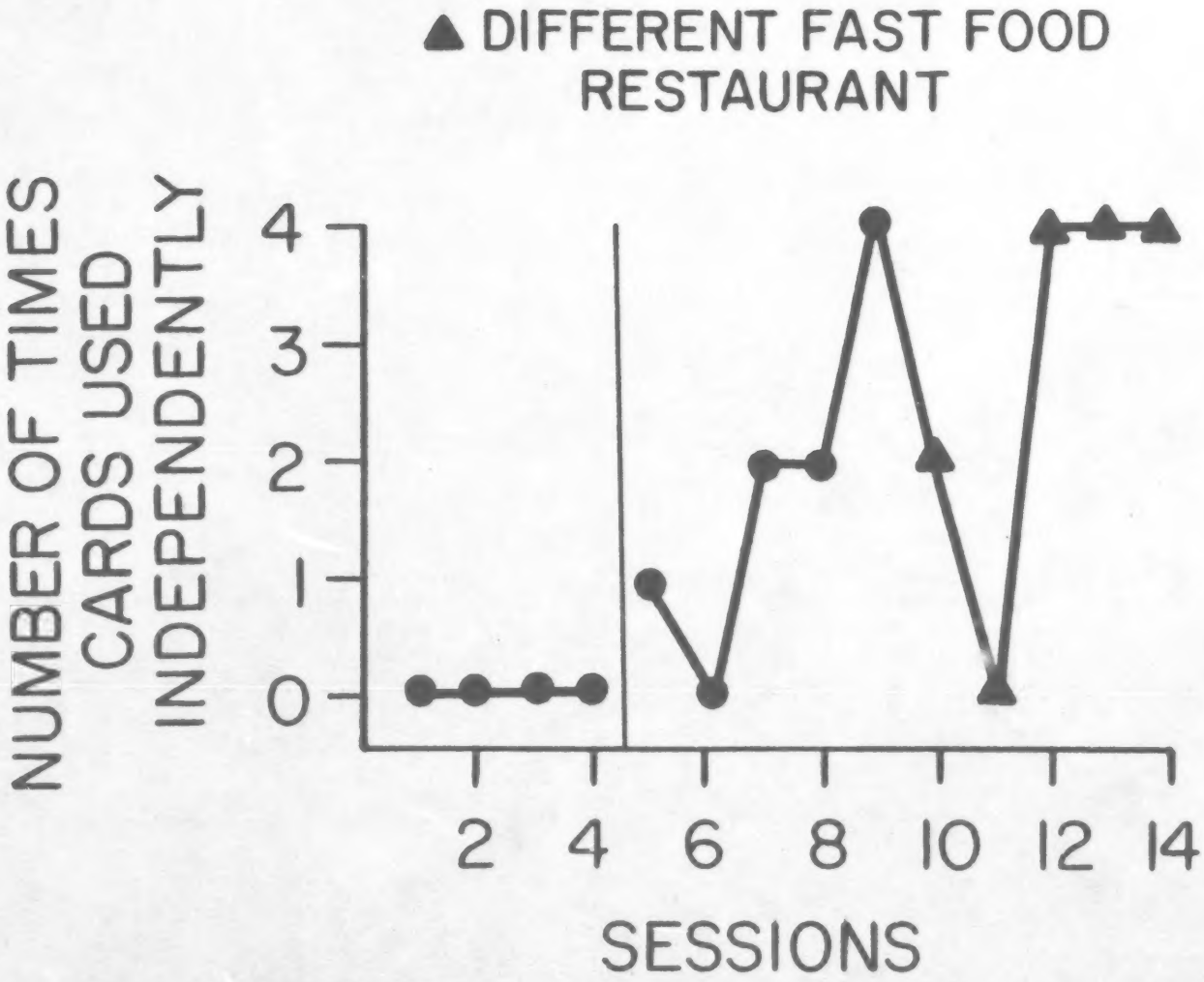

SOCIAL INTERACTIONS INITIATED BY NONHANDICAPPED SCOUTS
TYPE: INSTRUCTIONAL
SOCIAL ONLY
GREETING ONLY
AILEEN-TROOP I
NO INTERVENTION
JOAN-TROOP 2
NO INTERVENTION
LEADER INTERVENTION
NUMBER OF INTERACTIONS BY NONHANDICAPPED SCOUTS
22
18
14
10
6
2
1 2 3 4 5 6 7
1 2 3 4 5 6
SCOUT MEETINGS

NOISE MAKING RESPONSES DURING NONHANDICAPPED RECREATION CLASS




SECONDARY SOCIAL BEHAVIOR
● COMMUNITY SAMPLES
▲ SCHOOL SAMPLES
RON
BASELINE
MODELING/
REINFORCEMENT
100
80
60
40
20
0
4
8
12
16
RALPH
BASELINE
MODELING/
REINFORCEMENT
100
80
60
40
20
0
4
8
12
16
% OF INAPPROPRIATE SOCIAL BEHAVIOR
SESSIONS

ORDERING AT FAST FOOD RESTAURANT WITH PICTURE CARDS



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DEVELOPING CHRONOLOGICALLY AGE APPROPRIATE LEISURE SKILLS IN SEVERELY MULTIHANDICAPPED ADOLESCENTS

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Developing Chronologically Age Appropriate Leisure Skills in Severely Multihandicapped Adolescents

The relationship between normalization philosophy (Wolfensberger, 1972) and leisure skill training for retarded persons has not been clearly articulated. Wolfensberger (1972), has addressed the important role of normalization in recreation programming and concluded that community integration of handicapped individuals into recreation programs occurs all too infrequently. Furthermore, Wehman & Schleien (1980) noted that leisure skill selection for severely and profoundly retarded youth and adults is often not consistent with the chronological age of the individual, thereby leading to the use of infant and preschool recreational materials with adults.

Although there has been much discussion about this issue, few constructive alternative programs have emerged. Schleien, Kiernan, Ash & Wehman (1980, Note 1) taught a cooking leisure skill to a severely retarded adult. Wehman and his colleagues (1978) taught table game skills to severely retarded adolescents. Schleien, Wehman & Kiernan (1980, Note 2) also taught dart throwing skills to three severely/profoundly retarded individuals. This program was evaluated in a combination changing criterion and multiple baseline design.

In order to expand the range of leisure skill options which have been demonstrated for a severely handicapped adult population, this paper was developed. The purpose of this report is to describe three case studies. Severely multi-handicapped youth were taught the use of a frisbee, how to operate a cassette tape recorder, and electronic bowling skills. The leisure content was selected largely on the basis that many nonhandicapped peers regularly engage in these type of activities (Wehman & Schleien, 1980).

Program I: Use of a Frisbee

Participants and Setting

The two participants Ron and Ralph are males ages 21 and 19. They have been classified severely retarded with IQ's measuring below 30. Their expressive vocabulary is very limited, i.e., Ralph exhibits echolalic speech; however, Ron is presently in a picture communication program. Both participants engage in high rates of inappropriate behaviors such as noise making, rapid body rocking and hand clapping. Before this program was initiated neither Ron or Ralph had any previous leisure skill training or engaged in appropriate activities during free time.

The setting was in a public school for severely and profoundly handicapped students in Richmond, Virginia. A cooperative relationship existed between the Richmond Secondary Level SPH project staff and the public school teachers for program implementation. All three programs took place in this setting.

Rationale for Skill Selection

Frisbee was selected as an activity for several reasons. First, it was portable and could be played a number of places. Second, it was an inexpensive object to purchase. Third, the motor actions required were quite simple to perform once they were carefully coordinated. Finally, Frisbee can be a two-part skill usually requiring a second person; the interdependent nature of the activity (Mithaug & Wolfe, 1976) was viewed as desirable since the participants engaged in minimal cooperative leisure.

Task Analysis

The task analysis was initially drawn from the leisure curriculum developed by Wehman & Schleien (in press); it was then modified by the instructor for use with the participants in this program i.e., catching and throwing skills were both utilized. The task analysis formed the basis for initial assessment and

instruction. It can be found below.

Throwing the Frisbee

1. Hold frisbee in throwing position, fingers curled on underside, thumb topside, index finger on edge.
2. Raise dominant arm lifting frisbee to shoulder level.
3. Bend elbow, bringing frisbee inward toward chest.
4. Continue bending elbow until rim of frisbee makes contact with nondominant shoulder.
5. Quickly extend elbow outward away from body.
6. When elbow is fully extended release grasp on frisbee.
7. Throw frisbee 3' (keeping underside of frisbee parallel to ground).
8. Throw frisbee 6' (keeping underside of frisbee parallel to ground).
9. Throw frisbee 10' (keeping underside of frisbee parallel to ground).
10. Throw frisbee 15' (keeping underside of frisbee parallel to ground).

Catching the Frisbee

1. Stand away from (at least 5') and facing other player.
2. Extend both arms outward toward other player, palms outward, fingers extended.
3. Follow path of frisbee through air (using eyes and hands).
4. When frisbee approaches, grasp in hands firmly.

Teaching Procedures

From the initial baseline data, a step was selected for instruction. Ron began instruction on step one of throwing frisbee and Ralph's training started on step four of catching. These steps were the target behaviors which each individual was unable to complete independently (Knapczyk, 1975).

A staff person initially modeled the entire skill prior to a 15 minute training session. Instruction was then begun on the specific training step in the frisbee throwing task analysis. A four step hierarchy of a) independent response, b) verbal prompting, c) modeling and d) physical guidance was used for purposes of training and subsequent data collection. The trainer would initially provide a verbal cue to Ron and then Ralph to complete the step. If the student performed it correctly, he was socially reinforced. If not,

then the verbal cue was repeated and a model was presented. If the response was correct, then social reinforcement was provided. This sequence of graduated guidance was repeated throughout the training session. Training trials were alternated between the two students, and took place inside and outside the school.

Behavior Observation

Five training trials on the target steps were given during 15 minute instructional sessions daily. Data were collected dependent upon which step of the cue hierarchy was necessary for performance by the student. Weekly non-reinforced probe data were then collected on the entire skill to monitor progress. These data were collected when a trainer gave the general cue (i.e., "Ron throw the frisbee"). At a later point in the program it was decided to collect non-reinforced probe data at the end of each session instead of weekly. This was done for more regular feedback on student progress.

Results

Baseline data in Figure 1 indicated that Ron did not exhibit any frisbee

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skills whereas Ralph's data showed a minimum of steps he was able to complete independently; i.e., Ron functioning at 0 - step proficiency level of throwing, Ralph averaging 61 percent on catching. Once systematic instruction was provided both participant's frisbee-playing skills increased to 100%. After criterion was met a maintenance program was initiated so Ron and Ralph would sustain this particular skill and when given the opportunity, generalize playing frisbee to different settings. The maintenance program provided intermittent reinforcement for Ron and Ralph to throw the frisbee for gradually extended lengths of time.

Program II: Operating a Cassette Recorder

Participants

The participants Terry, Troy, and Gary, ages 16, 10 and 21 have been classified as severely and profoundly retarded with multiple handicaps i.e., Gary is also classified as legally blind with an IQ measuring below 30. Gary has a limited expressive vocabulary and Terry, and Troy are nonverbal with only Troy using the signs for eat and drink. Terry and Troy also exhibit a high rate of self-abusive inappropriate behaviors such as handbiting and hand banging. It was observed by staff, however, that all three of the participants appeared to enjoy music. Therefore, operating a cassette recorder was viewed as an age-appropriate leisure activity.

Rationale for Skill Selection

Manipulating a cassette recorder requires a simple set of motor behaviors, i.e., (bar pressing) and yet results in an immediate positive consequence of music. This activity is a good leisure skill for individuals with extremely limited motor repertoires and visual impairments. It is also an activity which may facilitate increased family acceptance since it is a common domestic use of leisure. Finally, there is a large range of different music reinforcers which can be employed.

Task Analysis

The task analysis below was used for the initial assessment and instruction.

1. Sit/stand in front of cassette deck.
2. On cue reaches toward cassette (on).
3. Extends index finger toward buttons.
4. Places finger on appropriate button.
5. Pushes "play" button down.
6. Listens to music for 1 minute.
7. Listens to music for 2 minutes.
8. Listens to music for 3 minutes.
9. On cue reaches toward cassette (off).
10. Extends index finger toward buttons.
11. Place finger on appropriate button.
12. Pushes "stop" button down.

Teaching Procedures and Observation

The baseline assessment data revealed that Terry should receive instruction on step two, Troy on step six, and Gary on the cluster of steps three, four, and five. The instructional procedures were implemented systematically using continuous social reinforcement. They were identical to the procedures used in the previous study.

Adaptations Since Gary was blind the following adaptations were made on the cassette tape recorder for him:

(1) three buttons not necessary for turning the machine on and off were covered with a small piece of cardboard and tape
(2) the play button (on) was covered with velcro (a rough textured material)
(3) the stop button (off) was covered with felt (a soft textured material)
(4) small pieces of felt were also placed on both sides of the individual cassette tapes opposite the end inserted into the recorder

Behavior Observation

Non-reinforced data probes were collected once a week which examined whether the student completed each step appropriately and independently. A percentage of steps completed independently was calculated for each weekly probe.

Results

Examination of baseline data indicated all three participants were unable to fully operate a cassette deck with Terry averaging 23%, Troy 62%, and Gary 56%. Through consistent systematic instruction, however, all participants increased their ability to independently operate the cassette deck with 90 to

100% accuracy during non-reinforced probe sessions and maintenance probes. Figure 2 provides the data for this program.

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Program III: Electronic Bowling

Participants

The two participants Sam and Lenny are male, ages 14 and 19. They have been classified severely and profoundly handicapped with IQ's measuring below 30. They are also severely motorically involved but ambulatory. Sam has a limited vocabulary of one to two word phrases and Lenny is nonverbal. Both engage in high rates of inappropriate behaviors such as body rocking, noise making and hand biting.

Rationale for Skill Selection

One popular group of leisure activities making their way in the late 1970's to the present is electronic games i.e., electronic bowling. This skill can easily be played by handicapped adults as well as nonhandicapped adults, and has the potential for generalizing the skills learned to regular bowling in a bowling alley. The machine used cost $75.00, was 5 feet long, and was purchased at Toys R Us Company.

Task Analysis

The task analysis was written by the instructor in accordance with the particular machine which was purchased. Here is the task analysis which was used in this program.

1. Sit/stand at end of bowling game.
2. Extend dominant hand toward power button.
3. Push button up to activate machine (on).

4. Extend dominant hand toward ball slot.
5. Grasp ball.
6. Extend hand to top of alley or machine close to body.
7. Line up shot, aiming at balls.
8. Push arm forward (not passing red foul line) rolling ball.
9. Release ball when reach red foul line.
10. Attend to top of machine (for score and frame).
11. Roll second ball.
12. Continue playing game until 10th frame is over.
13. Extend dominant hand toward power button.
14. Push button down to turn machine off.

Teaching Procedure and Observation

Initial baseline data indicated that Lenny should begin instruction on steps two and three and Sam's instruction should start with the combination of step seven and the steps ten through twelve. A cue hierarchy teaching sequence of graduated guidance was implemented similar to the procedures used in the previous two programs. The weekly data was collected initially in the program and then daily data was collected later in the program. The data were collected under a general cue of "Lenny, play with the bowling machine". No reinforcement was given until Lenny performed the steps in the bowling sequence.

Adaptations

An adaptation was necessary to cover three out of the four buttons found on the front panel of the machine. A combination of tape and cardboard was used with the only remaining button left uncovered for purposes of activating (on and off) the machine.

Experimental Design

In this case study a reversal design was used to evaluate the effectiveness of the program. After the initial baseline and subsequent instruction, a brief return to baseline (withdrawal of instructional procedure) was implemented. This phase was then followed by a reinstatement of the training procedure.

Results

Baseline data reflected limited ability to independently play electronic bowling with Sam averaging 55% and Lenny functioning at a consistent 28% proficiency level. After teaching procedures were initiated both participants were able to increase their electronic bowling skills, i.e., Sam to 91%; Lenny to 76%. A reversal design was used to determine effectiveness of teaching methods where baseline was reinstated for 3 sessions and then training. Figure 3 presents the sequence of instructional sessions and the results of this program.

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General Discussion

The results of each of three programs described in this paper provide support for severely, profoundly, and multihandicapped adolescents ability to acquire chronologically age appropriate leisure skills. It is incumbent upon teachers and the professionals who work with the severely handicapped to include recreation and leisure educational objectives into the students Individual Education Plan. Furthermore, these objectives must be taught in a sequential and systematic manner; it cannot be assumed that they will simply "evolve" into the student's repertoire of free time behaviors.

An optimal service delivery model, which was unfortunately not reflected in this paper, would be the use of skilled therapeutic recreation specialists, who could serve as consultants to teachers in assessment and skill selection, activity adapation, instruction, and community integration. The present programs did not demonstrate the critical linkage into the community and homes.

Although these objectives were discussed with family members of the participants, there was not a systematic follow through for generalization and maintenance.

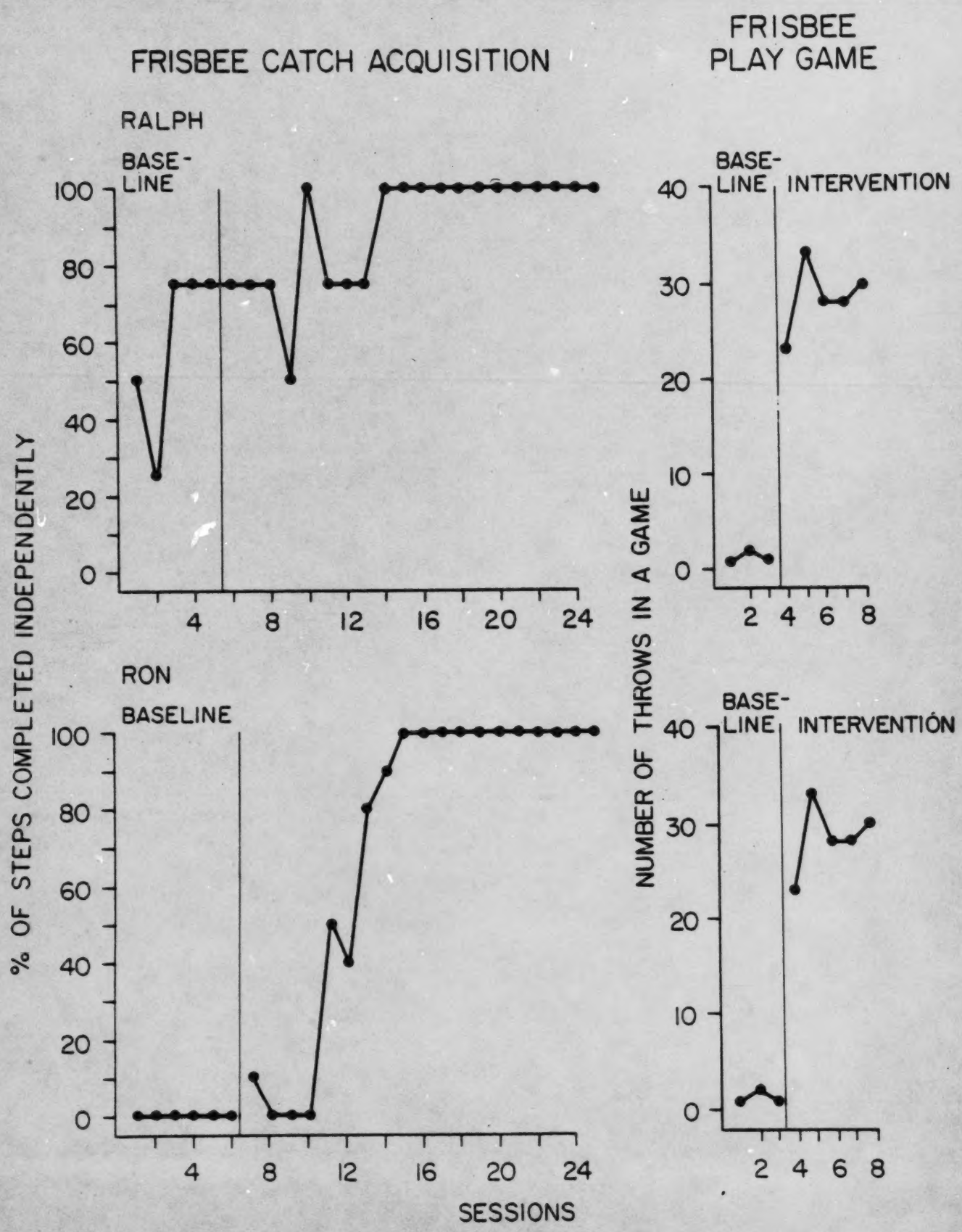
The primary purpose of this paper was, however, to describe age-appropriate leisure skills which severely handicapped students could acquire in spite of serious motor, social, and cognitive deficits. Hopefully, future efforts at leisure skill selection by teachers (Wehman & Schleien, 1980) will consider not only the student functioning level but also his/her chronological age.

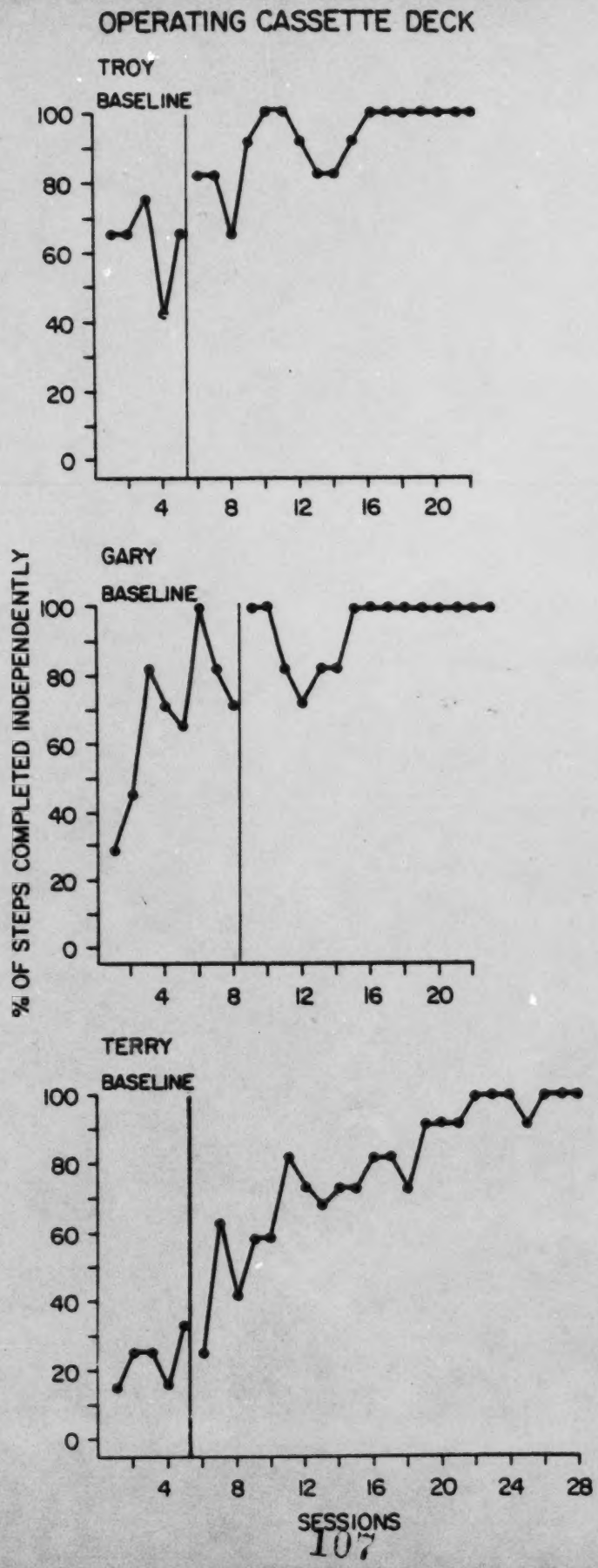
Figure Captions

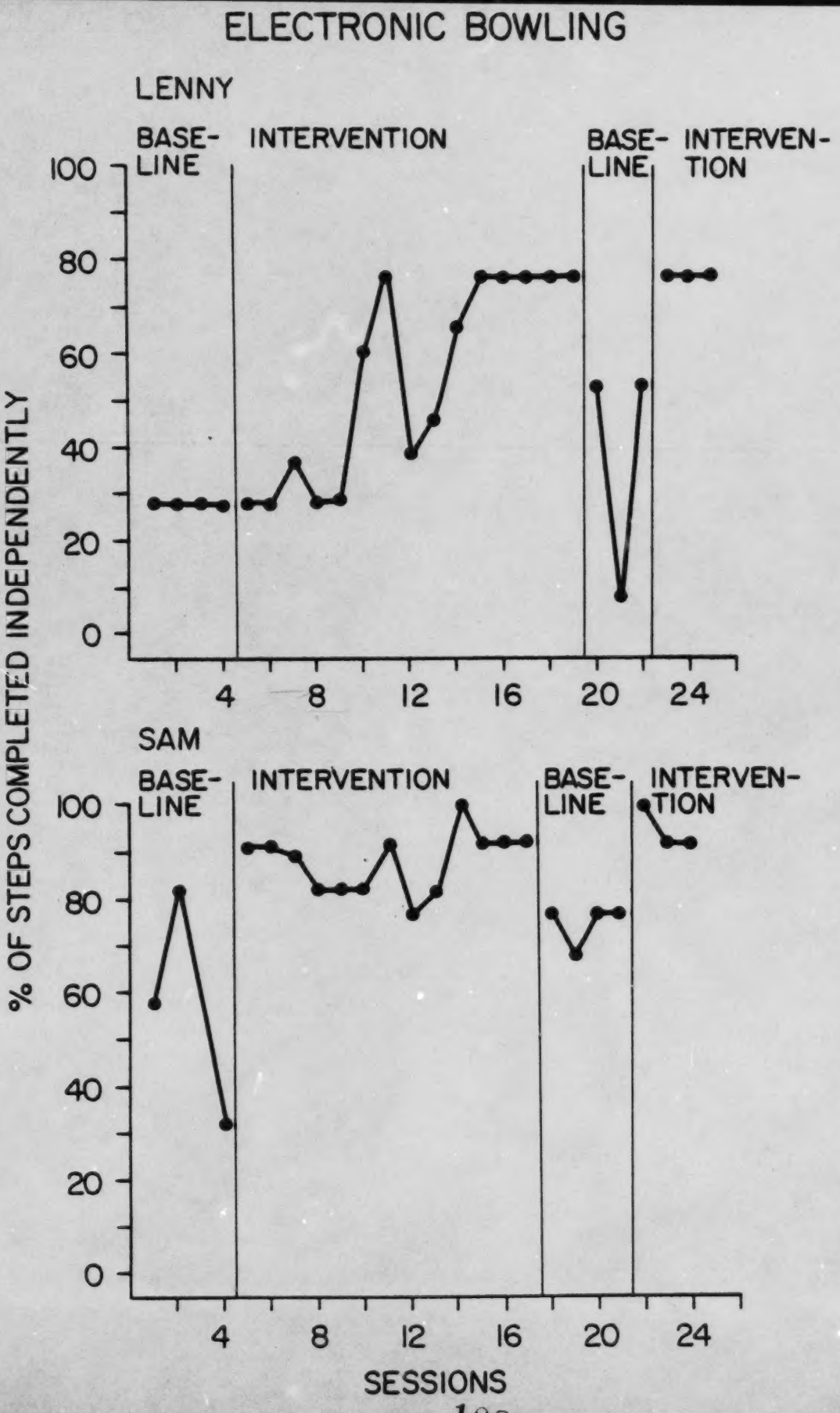
Figure 1 - Frisbee Playing Skills for two Students

Figure 2 - Operation of a Cassette Deck for Three Students

Figure 3 - Electronic Bowling Performance for Two Students


FRISBEE CATCH ACQUISITION
FRISBEE PLAY GAME
RALPH
BASE-LINE
INTERVENTION
RON
BASELINE
% OF STEPS COMPLETED INDEPENDENTLY
NUMBER OF THROWS IN A GAME
SESSIONS
0
20
40
60
80
100
10
30
2
4
6
8
12
16
20
24


OPERATING CASSETTE DECK
TROY
BASELINE
100
80
60
40
20
0
4
8
12
16
20
GARY
BASELINE
% OF STEPS COMPLETED INDEPENDENTLY
TERRY
BASELINE
24
28
SESSIONS


ELECTRONIC BOWLING
LENNY
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INTERVENTION
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100
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60
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4
8
12
16
20
24
SAM
BASE-LINE
INTERVENTION
BASE-LINE
INTERVEN-TION
% OF STEPS COMPLETED INDEPENDENTLY
SESSIONS

Notes

Note 1, Schleien, S., Kiernan, J., Ash, T., & Wehman, P. Developing independent cooking skills in a profoundly retarded woman, manuscript submitted for publication, 1980.

Note 2, Schleien, S., Wehman P., & Kiernan, J. Teaching leisure skills to severely multihandicapped adults. Manuscript submitted for publication, 1980.

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USE OF AN AUTOMATED RECREATIONAL DEVICE TO FACILITATE INDEPENDENT LEISURE AND MOTOR BEHAVIOR IN A PROFOUNDLY RETARDED MALE

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Use of an Automated Recreational Device
to Facilitate Independent Leisure and
Motor Behavior in a Profoundly Retarded Male

The potential for group instruction diminishes with students who are more severely handicapped. In practice, the teacher of the severely and profoundly handicapped (SPH) must frequently resort to one-to-one programming for each individual student in order to bring about behavior change and provide the most effective services. The result of a one-on-one programming approach, however, is that the remaining students in the classroom experience large periods of free time. In addition, because many SPH are physically involved and lack skills to self-initiate activities, the teacher also spends much programming time in transporting, positioning, prompting, etc., of students. These duties yield even more free time for the individual student. Since most SPH students cannot adequately occupy their own free time, it becomes lost time.

The utilization of electro-mechanical equipment, which automatically reinforces appropriate behavior without requiring the direct control of the teacher, deserves further attention particularly with this disability group. This type of equipment has obvious relevance due to the need for individualized programming with the SPH and for practicality in staffing patterns. The use of such equipment has been examined by several investigators. The utilization of an automatic, aversive stimulus (i.e., an unpleasant tone) on the reduction of slouching was investigated by Azrin, Rubin, O'Brien, Ayllon, and Roll (1968). A variety of positive reinforcers have been utilized in classrooms or institutional settings to increase appropriate behaviors such as contingent music (Wilson & Hopkins, 1973; Macurik, 1979), vibration (Azrin & O'Brien, 1970; Bailey & Meyerson, 1970) and film strip viewing (Edelson and Sprague, 1974).

The current investigation utilized contingent visual cartoons to increase purposeful arm/hand movements or motor interactions with leisure materials by a profoundly handicapped student during free periods within his classroom day. In addition, observations were made throughout the program on the associated response of upright sitting (i.e., head-up response). This student's frequency of arm/hand movements and the duration of upright sitting is observed during free periods when exposed to infant toys versus free periods when exposed to a self-operating cartoon box which required discrete motor movements to operate.

Method

Participant

Mike is a 14 year old, non-ambulatory male who is diagnosed as profoundly mentally retarded with severe spasticity in all four limbs. He is very small for his age and appears to be four or five years old. Mike cannot feed himself or perform any type of self-help task. His Hogg chair has been equipped with a lap board and other positioning devices which facilitate upright sitting; however, without such aides, he possesses head control limited to approximately 10 seconds.

His arm movements appear largely reflexive and jerky in nature. He can put his hand on a picture communication card such as the "eat" card appropriately when asked to do so; however, the accomplishment of a successful response requires between 10 and 40 seconds. Mike has been taught to turn pages in a large photo album "book" which was adapted by sewing beads on to the corners of each page separating the pages. He inserts his fingers or small wrist between the heavy pages and jerks his arm up, thereby, turning the pages.

Setting

Mike attends a public school program for severely and profoundly handicapped students and is in one of the secondary level classes. The staff to student ratio in his class is two staff (i.e., a teacher and an aide) to eight students. Three students including himself are nonambulatory while five are ambulatory to some degree. Seven students are diagnosed as profoundly retarded and one as severely retarded. Only two students can toilet themselves independently; Mike, as well as one other young lady, is diapered due to lack of motor control.

Program Objectives

It was observed that each of the students in this class experienced much free time due to staff involvement in one-to-one programming with other students as well as in transporting, toileting, and positioning of other students. It was also observed that the more handicapped a student was, the less capable he was, either motorically or cognitively, of occupying his own free time with typical leisure materials. For instance, each morning during a toileting period in which Mike was not involved, he either fell asleep or simply placed his head down on his lap board. During this time he often exhibited no motor movements whatsoever for that period.

The objective of this program was twofold. First, the program sought to compare Mike's utilization of self-operating leisure equipment (a cartoon box) during this free period to his utilization of typical toys or favorite objects often put in front of profoundly handicapped people to help them occupy their time. Examples of these items are magazines, books, and infant-type toys. In this case, Mike's adapted photo album and typical squeeze toys were used. Secondly, the program attempted to examine the effects of the cartoon box versus the toy access condition on two motor skill objectives for Mike. These objectives are: 1) maintaining and increasing an upright position in his chair and

2) increasing purposeful arm/hand movements. These objectives had already been formulated within Mike's I.E.P. If these program areas could be approached through automated equipment when the teacher was not even available for teaching, the use of such equipment could be highly justified within this classroom.

Apparatus (cartoon box)

A Fisher-Price Movie Viewer Theater (Model # 463) was modified to accept a standard 6 VDC motor. This motor turned the projector crank at 20 R.P.M., and when utilized with an 8 mm. film loop (also available from Fisher-Price) allowed for continuous viewing. Three different film loops were rotated throughout the study. These were: The Pink Panther, Sylvester and Tweety, and The Cookie Monster.

Figure 1 depicts the projector housed in a plywood box (32 cm. x 60 cm.

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Insert Figure 1 About Here
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x 28 cm.), such that the cartoon viewing screen was centered directly in front of the student at eye level. A plywood manipulandum or lever (14 cm. x 14 cm.) fastened to the front of the box allowed the student to operate the projector on a continuous schedule of reinforcement. The manipulandum was covered with a thin layer of sponge or foam to provide a soft pressing surface. A press of the manipulandum sent a pulse to a timer (Gerbrands #G4610) which activated the projector for six seconds. Once timed out, the screen went dark and the projector could only be activated with another response. Since the closure to the timer was pulsed, the student could not view continuously by simply resting his hand on the manupulandum but rather discrete and purposeful motor movements were required for each six second viewing.

A Gerbrands 28 VDC power supply (#64660) powered the system.

Procedure

The morning toileting period which consisted of 10 to 15 minutes of free time for Mike was selected as the daily observational session. Mike was placed in his chair with his lap board on in front of a table. An observer sat slightly behind Mike and to his left. The phases of the program are as follows:

Phase I: Access to typical toys and adapted book (Baseline).

Phase II: Access to self-operating leisure equipment.

Phase III: A reinstatement of access to typical toys (Baseline).

Phase IV: A reinstatement of access to self-operating leisure equipment.

Behavior Observation

An observer was present for 10 minutes of the morning free period throughout the program. She was equipped with a stop watch and a frequency counter. Two behaviors were observed simultaneously during the 10 minute period: the number of purposeful arm/hand movements and the cumulative duration of the head-up response (i.e., sitting upright in the chair).

Purposeful arm/hand movements were defined as follows: An arm or hand movement which activates or alters the leisure materials in some form but not including merely grazing the materials with the arm/hand. Examples of activating or altering of materials were given such as:

- Turning a page in the photo-album book.
- Banging on item to produce it's sound (e.g., squeaking a squeeze toy).
- Picking up an item.
- Picking up and holding an item.
- Activating the cartoon box.

If a "grasping and holding" response was observed without any further manipulation, it was counted as one response until the object was released. If it was picked up and held again, it was counted again.

Head-up response was defined as Mike's head being above a line of masking tape placed on the lateral headrests of his chair. If the head was observed above the masking tape line, his head was in the upper 45^{o}angle between the back rest of the chair and the lap board. He could lean on either of the lateral head rests or lean his head back and still be assessed as in the upright position.

During the observational sessions, the cumulative time that Mike held his head up over the 10 minutes was recorded. Thus, the stop watch was activated after the head was observed above the masking tape line for two seconds. If the head dropped below the line for two seconds the watch was stopped and was not reactivated again until Mike's head was observed above the line for two seconds.

Inter-rater reliability was calculated with a second rater for both types of observations. Reliability coefficients ranged from .86 to 1.00.

Phase I: In this phase, Mike was positioned as usual in his chair with a squeeze toy and his photo book placed on his lap board. The staff with the exception of the observer began the toileting/diapering of the other students. The observer recorded what time the session began and observed Mike's behavior. The frequency of the defined purposeful arm/hand movements and the cumulative duration of head-up behavior was recorded until the end of 10 minutes. The observer did not interact with Mike in any way.

Phase II: After a stable baseline of the behaviors was established in Phase I, Mike was given access to self-operating leisure equipment (i.e., the cartoon box) for 10 minutes each morning during the same free period. The cartoon box

was placed on the table in front of his lap board at his eye level when sitting up. The other staff and students went about their duties and the observer recorded the beginning of the 10 minute session. The same behaviors assessed in Phase I were observed during this phase and the observer again avoided any type of interaction with the student.

Phase III: This phase reinstated the toy/book (only) access condition of Phase I. The positioning of Mike and the procedures were identical to that of Phase I.

Phase IV: The cartoon box conditions of phase II were reinstated in the same free-time period. Observational procedures utilized in Phase II were also used throughout Phase IV.

The program sequence described above effectively provides a reversal design (ABAB) with which to evaluate differences in behavior under the toy/book access condition and the self-operating leisure equipment condition. The behaviors examined under each condition represent two areas of high instructional importance within Mike's school program and, of course, in Mike's personal development. These are: 1) increasing the number of purposeful arm/hand movements and 2) the duration of the head-up response.

Results and Discussion

Figure 2 shows Mike's behaviors in each motor area under both conditions.

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Insert Figure 2 About Here
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Phase I shows that, in general, very little behavior was being exhibited by Mike during this free period. His head was down on his lap board most of the time and although he manipulated leisure materials occasionally during the 10 minute periods, he generally remained inactive. Figure 2 also shows that during the two cartoon box conditions, Mike showed for higher rates of the defined

arm/hand movements and the duration of upright sitting when compared to the toy/book access condition of Phases I and III. These higher rates of responding can be seen consistently throughout both cartoon box conditions and the behaviors did not decrease appreciably after repeated exposure to the equipment in that Phase II continued for 10 days and Phase IV for eight days.

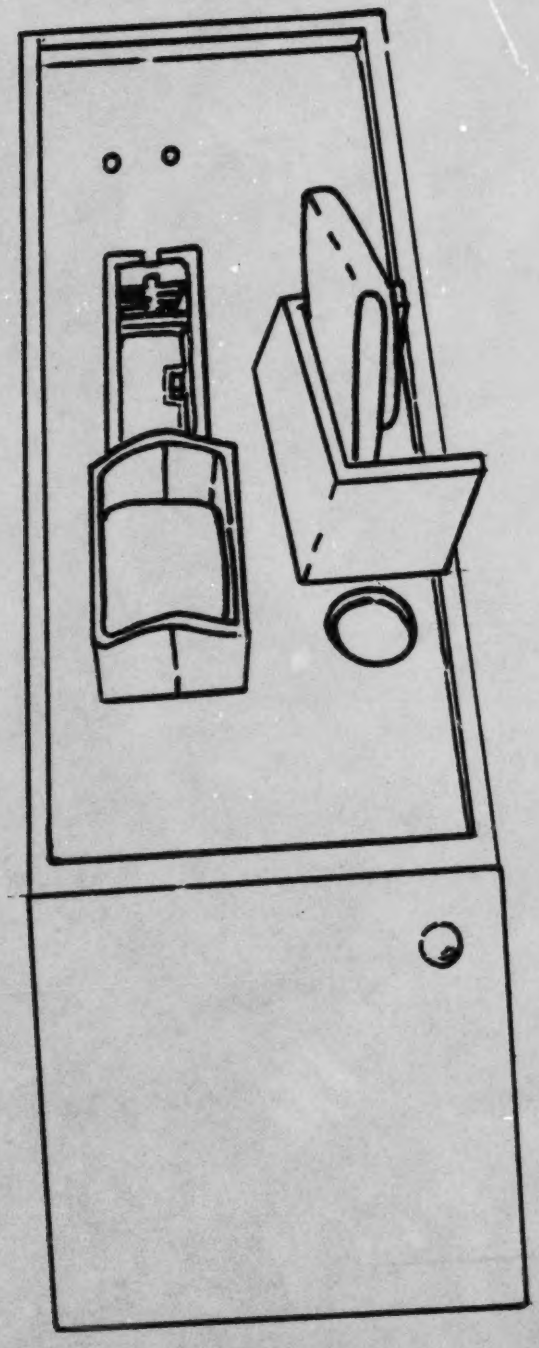
Phase III, the reinstatement to toy/book access or Baseline II, shows higher and more variable rates of the head-up behavior than seen in Baseline I, the first toy/book access condition. No such increase can be seen in the other behavioral variable; however, that is, the number of purposeful arm/hand movements remained low during both baseline conditions (I and III).

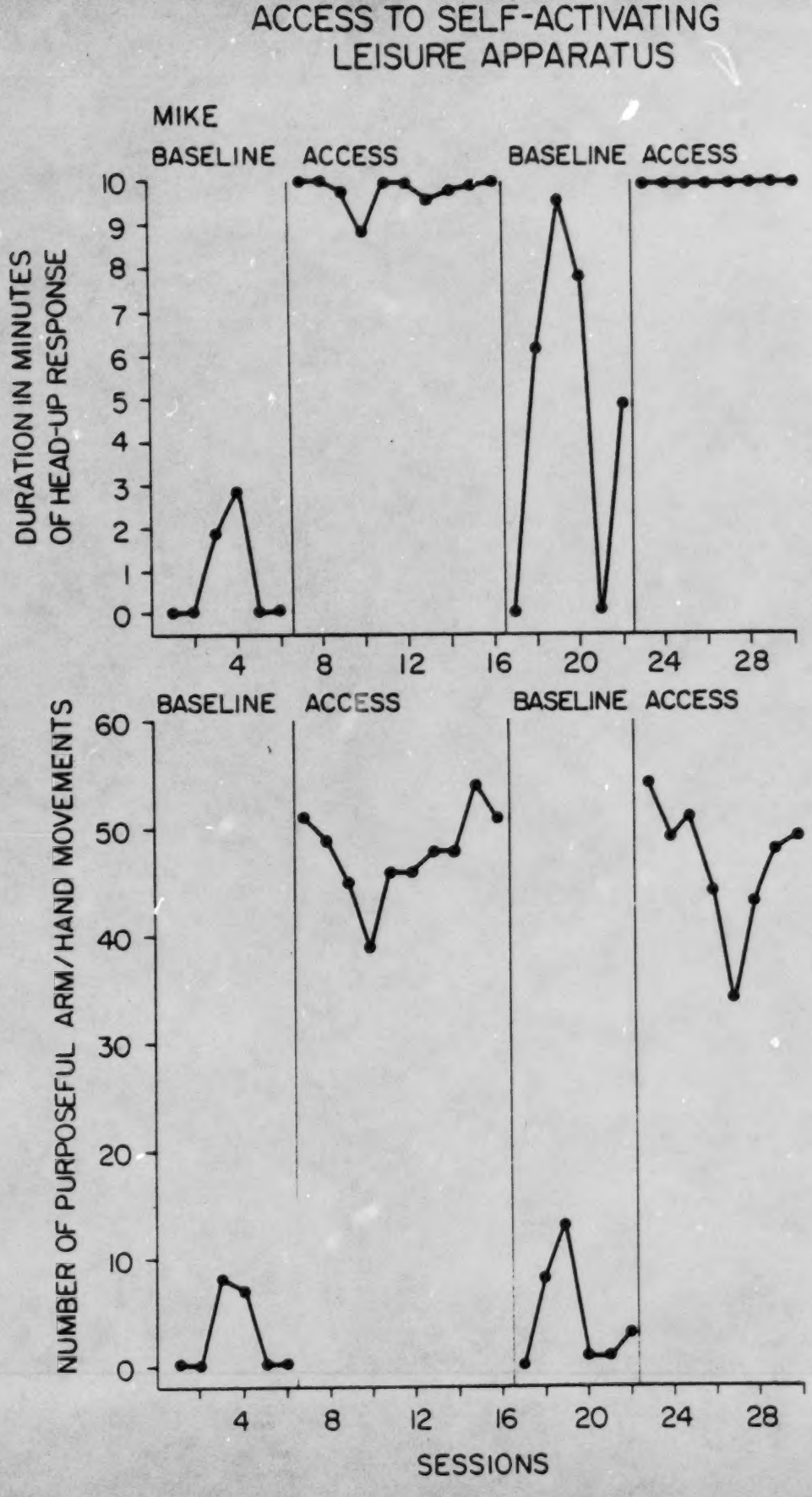
The results of this study show automated equipment like the cartoon box described here was utilized avidly by a profoundly retarded/multiply handicapped young man over an extended period of time, thereby, exhibiting independent leisure behaviors. In addition the young man exhibited higher rate responding in upright sitting and in appropriate, purposeful arm/hand movements when given automated equipment, than when exposed to typical types of leisure materials (i.e., infant toys, books, etc.) often given to profoundly handicapped people of all ages. Further, in that upright sitting and directed arm/hand movements are actual instructional areas for Mike, the cartoon box can be viewed as a type of teaching machine which provided a stimulus and contingent reinforcement for appropriate behavior in the absence of the teacher. Although the sessions in the present study were short, the equipment could be used throughout the school day using other cartoons or interchanging contingent music with cartoons. In view of the need for individualized instruction and the current reality of staffing patterns in our schools, the use of automated teaching equipment warrants further investigation.

Figure Captions

Figure 1 - An Automated Recreational Device (The Cartoon Box)

Figure 2 - Frequency of Arm/Hand Movements and Duration of Head Up Response under Toy Access (Baseline) and Cartoon Box Access.




ACCESS TO SELF-ACTIVATING
LEISURE APPARATUS
MIKE
BASELINE
ACCESS
BASELINE
ACCESS
DURATION IN MINUTES
OF HEAD-UP RESPONSE
10
9
8
7
6
5
4
3
2
1
0
4
8
12
16
20
24
28
BASELINE
ACCESS
BASELINE
ACCESS
NUMBER OF PURPOSEFUL ARM/HAND MOVEMENTS
60
50
40
30
20
10
0
4
8
12
16
20
24
28
SESSIONS

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AN INITIAL ASSESSMENT OF THE PARENTAL NEEDS OF SEVERELY AND PROFOUNDLY HANDICAPPED YOUTH

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[1] The development and dissemination of this paper was partially supported by BEH Grant #G0079022897.

[2] Acknowledgements are extended to the families of our students.

An Initial Assessment of the Parental Needs of Severely and Profoundly Handicapped Youth

A major problem in the education of severely handicapped students is limited parental involvement. In serving severely handicapped individuals there has been a pronounced emphasis on instructional programming for the student with far less attention provided for parents and other family members. Similarly, personnel preparation efforts have focused on teachers and other professional staff with less time set aside for training parents.

There are several reasons why this program limitation must be alleviated. First, parents must have more knowledge, familiarity and sensitivity to what relevant and appropriate educational objectives are for their child. This includes an optimistic yet realistic understanding of what skills their child should be taught. Second, parents need help in training and maintaining their child. Severely handicapped individuals are disruptive, physically involved, often withdrawn and exhibit few communication skills. Living with an individual that has such serious problems can be extraordinarily difficult even with professional assistance. It is easy to see why many parents are hasty to institutionalize their child. Finally, if parents of severely handicapped students are to elevate their expectations for the student's future, professionals must initiate and maintain active communication (Goodall, Hill & Hill, 1980). Parents must be kept informed of the newest developments in the field.

The purpose of this paper is to present a teacher-designed assessment tool utilized to evaluate the needs of severely and profoundly handicapped (SPH) youth in an inner-city public school program. Parents were interviewed with this assessment tool for the purpose of identifying relevant short term objectives for instruction as well as setting priorities for instructional programs. Results of this needs assessment are then presented.

Participants

A total of 18 parents were visited and interviewed. All parents were selected whose son/daughter were between 10 and 21 years of age. All parents had a son/daughter classified as severely or profoundly retarded or severely multiply handicapped. Most of the parents were black and all lived in Richmond City. The children attended a public school serving severely and profoundly handicapped students.

Purpose of Interview

There were several reasons for undertaking this initial assessment. First, there was little published data to point the way for having intervention with a secondary inner-city SPH population. Hence accurate needs assessment data were necessary for curriculum selected. Second, it was necessary to meet the parents and understand their feelings. And third, it was invaluable for some staff to visit the homes of inner-city students and relate to the difficulties in programming which many of the living conditions present.

Selecting Questionaire Items

Questionaire items were identified on the basis primarily of what was perceived as being the most important areas in: a) domestic/self-care skills and b) use of leisure time. These two areas of emphasis were viewed as being principle elements in preventing institutionalization and helping family members adjust to the severely handicapped individual. The wording of the items was designed with the understanding that staff would be interviewing parents. These items were not mailed out for completion. The questionaire items are listed in Table 1.

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Insert Table 1 About Here
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Interview Process

The structured interview process was employed in order to capture the full meaning of the parents' needs. Staff who made the visits were teachers trained in severely/profoundly handicapping conditions. Several of the staff were also affiliated with a community skill training project which worked cooperatively in the school with the teachers. A phone call was made by a staff person to arrange a home visit. In several cases initial visits were made before interviewing for data collection purposes. In ideal situations with sufficient staff, initial visits would be made before interviewing. The time of most visits was after school or in the early evening when both parents might be available. A number of the children only had one parent and lived in federal housing projects.

Results and Discussion

The results to specific areas of inquiry collected prior to any form of regular home intervention are presented in Table 2. The total number of affirma-

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tive responses to each statement per family are given as well as the number of affirmative responses from families with a younger (i.e., between 11 and 16 years of age) male or female SPH child and an older (i.e., between 17 and 21 years of age) adolescent male or female. The interview included questions regarding the exhibition of skills in the following areas of interest: Self care, Domestic, Home/Community integration, Home Leisure Time, Parental Needs and Awareness and Communication skills. Although the interview was not repeated to provide re-test reliability which would have greatly strengthened the data presented, from this information a picture does emerge of the home and family life of the SPH population.

This picture demonstrates the need for home and community intervention for these families. In general, the data show family life to be characterized by a) nearly complete supervision and care for the child, b) much physical hardship on family members, c) a high degree of community isolation, and d) at best, superficial knowledge regarding current, appropriate educational practices with SPH. On the other hand, the families we interviewed also exhibited adaptation and resilience to their situation as seen in their ideosyncratic styles of communicating with a non-verbal/non-signing child.

Responses to questions regarding self-care skills, showed that out of the 18 students, 10 could feed themselves independently with a spoon and none could use a knife and fork independently. Only one student was reported to dress herself completely independently and only six could toilet themselves without some help. In the domestic skill area, we find an absence of responsibilities in the home for most students. No students had a regular home chore they performed on a regular basis and only five had an occasional chore. Only five parents had the expectation that their child could perform a home chore.

Home and community integration questions revealed not only that most students were isolated from the community but also that half of the students occupied restricted territory within their own home. Eight families out of the 18 surveyed stated that the student occasionally went on errands or community trips with the family and only one young man frequently accompanied his mother into the community. It may be of note that this is a single mother who is also physically handicapped.

In the leisure area, only half of the families surveyed stated that the child participated in any form of family leisure activities. Television was the family activity usually specified. When asked what the adolescent did on this free time at home, 10 parents could identify only watching T.V. or listening to music (i.e., they had no hobbies, no favorite ball, toy or other activities).

In the parental need or awareness section, most families (15) did believe they wanted or needed home intervention. Only one family was aware of adult programs in the area and only seven stated that they used tangible rewards with their child. Few parents stated that they understood the beneficial aspects of exposing their child to nonhandicapped people on a regular basis.

The interview regarding how the child expressed needs and desires to parents showed that most students (11) did not utilize traditional forms of communication on a regular basis to express themselves (such as signs, words or picture/symbols). Most parents stated that their child, largely, used vocalizations to communicate and only six out of 18 students exhibited any type of verbal communication. Interestingly, however, only one family stated that their child could not communicate with them in any form. This student has Tubular Sclerosis.

The results of these interviews have served to strengthen the project's conviction to strive for greater community integration for students and their families. In addition, interviews of this nature may serve as a method to socially validate curriculum selection for each individual student based upon family member judgement. To increase the reliability of the data collected, such interviews should be repeated more than once and the responses on each compared. Skill selection which is relevant to family life may be of vital importance for the SPH school population, in that, these individuals may live under their family care throughout their lives.

Table 1

Richmond Secondary Project
Initial Family Life Questionaire

Note: Describe to parent(s) the reasons below for obtaining this information prior to beginning the questionaire.

1. The project is available to begin home and community intervention with your son/daughter; therefore,we need to know exactly what skills he/she lacks (or exhibits) at home and in the community.

2. In order to justify permanently increasing services to you as a family, we need to know more about the realities of having a severely or profoundly handicapped child in the home.

Questions-
Self-Help Skills

1. Does your child attend to his/her toileting needs without any help from you (i.e., attends to own bodily cues, goes, undresses/dresses, cleans self, etc.)?

2. Does your child dress without any help from you (i.e., if entire outfit laid out, will he/she put on each piece independently)?

3. Given food cut up in a bowl/plate, can your child feed self with a spoon?

Domestic Skills

4. Do you require your child to perform any small chore or job around the house on a regular basis?

5. If you ask him/her to perform a small chore, is he/she able to do it independently or does he/she do it willingly?

6. Given special training, do you think your child could ever be responsible for a regular chore around your house?

Home/Community Integration

7. Can your child move about the house and yard freely or do you restrict some areas from his/her use?

    a) If nonambulatory: can you move his/her chair throughout the house and yard? If not, where can't he/she go?

8. Do you ever take your child with you on common errands such as the grocery store, post office, etc.?

    a) If so, approximately how often per week?

Home Leisure Skills

9. What does your child do with his/her free time at home?

    a) If answer is watches TV or listens to music, does he/she have any other favorite past-times than TV or music? Any games? Any favorite toy or object?

10. Does your child participate in family past-times in the home (e.g., picnics, etc.) or out in the community (e.g., visits to relatives)?

Parental Needs/Awareness

11. Would you like a trainer to come into your home to assist you in home training?

12. Are you aware of your child's program options after age 21?

13. Do you reward appropriate behavior? If so, what rewards do you use?

14. Do you think your child could benefit from joining groups such as scouts with nonhandicapped people his/her own age?

Communication Skills

15. How does your child communicate with you most of the time?

Verbally	_____	Physical Interactions (e.g., pulling on parent, affection to parent, physical displays of anger	_____
Manual Signs/ Picture Communication	_____		
Vocalizations	_____	No Communication	_____

a) Does your child say any words?

Table 2

Home Interview Survey
(Pre-Intervention data)

N = 18 families surveyed
(9 girls; 9 boys)

Number of affirmative respondents by age and sex of child

	Question / Ages Sex	11-16 M	11-16 F	17-21 M	17-21 F	Total
Self-Care Skills	Child toilets independently	3	1	1	1	6
	Child dresses independently	0	0	0	1	1
	Child feeds self with spoon independently	3	2	4	1	10
Domestic Skills	Child is responsible for home chore on regular basis	0	0	0	0	0
	Child exhibits a simple chore at home when requested	3	0	1	1	5
	Parent believed child could perform a chore at home	3	0	1	1	5
Home/Community Integration	Child is mobile or can be transported to most domains within home/yard	5	1	2	1	9
	Child is restricted in domains within home/yard	1	3	2	3	9
	Occasionally child accompanies parent on common errands	3	0	3	2	8
	Frequently accompanies parents on common errands	1	0	0	0	1

Table 2 (continued)

		11-16 M	11-16 F	17-21 M	17-21 F	Total
Home Leisure Skills	Child's leisure time reported as TV or music only (no other type of game/object)	3	3	3	1	10
	Child participates in some form of family leisure trips or activities	4	1	1	3	9
Parental Needs/Awareness	Home intervention desired	6	4	1	4	15
	Aware of programs after age 21 for child	0	0	1	0	1
	Used a tangible reward system with child	4	2	0	1	7
	Aware of benefits of interactions with nonhandicapped on regular basis	0	0	1	4	5
Communication Skills	Child communicates verbally	0	0	0	0	0
	Child communicates largely through sign or symbols	0	0	0	0	0
	Child uses some verbalizations for communication in combination with other types	0	1	4	1	6
	Child communicates largely through vocalizations	2	4	3	2	11
	Child communicates largely through physical interactions	3	0	0	0	3
	Child does not communicate in any form	0	0	0	1	1

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DEVELOPING INDEPENDENT COOKING SKILLS IN A PROFOUNDLY RETARDED WOMAN[1]

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Running Head: Developing Independent Cooking Skills

[1]The development and dissemination of this paper was partially supported by Virginia State Developmental Disabilities Grant #79-14.

Developing Independent Cooking Skills
in a Profoundly Retarded Woman

Prior to 1975 few studies were available which demonstrated the acquisition and generalization of community living skills in severely handicapped adults. However, in recent years this void in the literature has gradually been filled. For example, general housekeeping (Bauman & Iwata, 1977), coin usage (Trace, Cuvo & Criswell, 1977), travel training (Neef, Iwata & Page, 1978), street crossing (Vogelsburg & Rusch, 1979), clothing selection (Nutter & Reid, 1978), and leisure (Johnson & Bailey, 1977; Wehman, Renzaglia, Berry, Schutz & Karan, 1978) are all examples of independent living skill competence in severely handicapped persons.

One skill area which has received limited attention and yet which is critical to independence or semi-independence in group homes, supervised apartments, or real homes is cooking and meal preparation. A review of literature indicated that only a study by Robinson-Wilson (1976) addressed this important area. The focus of this program was the use of picture recipes as a means of facilitating meal preparation skills.

Cooking as an instructional goal may have a threefold objective. First, it may be a necessary skill to eat independently. Second, it could be an excellent leisure activity, for once an individual acquires general stove-use skills, many types of foods and meals may be prepared. Third, cooking skills are frequently required in many hotel and restaurant settings for kitchen job vacancies.

Therefore, it was decided to train a severely mentally retarded woman three specific cooking skills, with a focus on these skills being used for leisure activity. Systematic instructional procedures were used in combination with a series of material and procedural modifications.

Method

Participant

Heidi is a 28 year old adult female attending an adult developmental center. Her IQ on the Stanford-Binet is 19 placing her in the profoundly retarded range. According to her AAMD classification, her adaptive functioning is in the severely retarded range. Heidi is an epileptic having daily petit and grand mal seizures. She receives the following medications and dosages for the control of her seizures: mysoline, 250 mgm., three times daily; tegretol, 200 mgm., three times daily; and dilantin, 300 mgm., once daily.

Heidi's frequent loud and inappropriate verbalizations are disruptive to others in the immediate environment. Her receptive language is good, however, her expressive language is poor as she exhibits high degrees of perseveratory speech. Heidi is inconsistent in her performance on most tasks. High distractability negatively affects most efforts at instruction and performance is facilitated only in a one-to-one trainer/staff situation. Heidi responds well to social reinforcement (e.g., verbal praise, hugs, back rubs) although she rarely self-initiates any activity.

Following conversation with parents and observation in the participant's home, it was discovered that Heidi's free time consisted of

completing simple chores in the home (e.g., getting ashtrays for guests), singing childrens' songs while dancing inappropriately by herself, and watching her mother prepare meals.

Setting

Instruction took place at a community adult development center in the greater Richmond, Virginia area. The center offers daily living, social/communication, and vocational skills training to 12 severely and profoundly handicapped persons over 21 years of age. The clients attend the center daily from 9 am to 3 pm. The cooking program transpired in the center's kitchen area. This room contained cooking materials and appliances commonly found in the home environment (e.g., stove, sink, counter top, refrigerator/freezer, coffeemaker, cupboards, cooking utensils).

Program Objective

The objective of this program was to develop and evaluate cooking skills in a profoundly retarded adult. Three skills were targeted for instruction, each utilizing a different function of a kitchen stove. Boiling an egg requires manipulation of the top stove burner, broiling an english muffin and cheese utilizes the oven broiler, and a TV dinner was prepared in the baking oven. To reach criterion on each skill, the participant had to perform each step of a task analysis correctly and without assistance on two consecutive days. Upon completion of the cooking program, Heidi would be able to prepare three meals successfully and independently.

Secondary objectives were to generalize the cooking skills to two other environments (i.e., another community training facility that Heidi would be transferring to in the near future, participant's home) and to the preparation of other recipes requiring similar skills and behaviors (i.e., boil frozen vegetable cooking bag, broil hot dog, bake frozen pizza). The generalization of skills to the preparation of additional dishes would make the program cost effective. With a simple verbal prompt including an action verb (e.g., "Heidi, broil the hot dog."), the participant could prepare several dishes with mastery of just a few skills.

Rationale for Skill Selection

The rationale for selection of the three cooking skills was that a) Heidi previously enjoyed observing her mother prepare the family dinners and snacks; b) by teaching skills employing three distinct uses of a kitchen stove, potential for the preparation of a wider variety of meals is made possible (for example, instead of teaching cooking skills using the top stove burner, exclusively, and limiting the individual's repertoire to the generalization of other boiling recipes, cooking skills from each of the three oven modes may allow for a more versatile cook and potential for much greater generalization); c) the equipment was available in the training center and home; d) cooking activities are functional and chronologically age appropriate; and 3) commensurate with daily living skills which facilitate independent community living.

Materials and Equipment/Special Adaptations

The materials employed in the program are commensurate with those commonly used in a domestic kitchen. Special adaptations were implemented when necessary to simplify the cooking skills using readily available household items. Cost, safety, and convenience were considered when designing the program. Hard boiled eggs were used during the boiling skill eliminating breakage and allowing for repeated use of one egg. An empty TV dinner tray covered with aluminum foil was placed in its original carton and used in place of a real dinner. This eliminated the spillage of boiling liquids and sauces from the tray and was cost-effective.

Additional modified materials/equipment included a color coded stove with a separate heat control knob which could be simply manipulated by the instructor, and a portable kitchen timer with a removable red tape strip for correct cooking time identification. Other materials/equipment and special adaptations are listed in Table 1.

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Experimental Design

The program incorporated a multiple baseline design across the three different cooking skills. Pre-instruction competencies were determined by initial baselines. Baseline data were collected across each skill after which instruction commenced on boiling an egg. During the instruction phase of this skill, baselining continued on the english

muffin and TV dinner skills. A minimal competency level of a five step increase on the task analysis for two consecutive trials led to instruction on the following skill. Baseline continued on the final skill until the same minimal competency level was obtained on broiling the english muffin and cheese. At this time, instruction began on baking the TV dinner. Criterion for mastery of a skill was 100 percent independent performance of all the steps of the task analysis on two consecutive trials. Following acquisition of Skills A and B, weekly probes were taken until criterion was met on Skill C.

Procedure

Instruction was conducted four to five times per week, with approximately 15 minutes of instruction per skill. Sessions were held in the late morning hours prior to lunch because the cooking skills could be appropriate as lunch-time meals.

A different task analysis was utilized to identify component subskills of each cooking activity. Table 2 includes the task analysis, performance objective, and verbal cue for each skill. A popular cook book, Joy of Cooking (Rombauer & Rombauer-Becker, 1964) and center staff consultation assisted in the development of the task analyses. It was evident following staff discussions concerning the capabilities of the participant that various procedural modifications were necessary if the skills were to be successfully acquired by Heidi. For example, the task analysis for boiling an egg required the egg to initially be placed in a saucepan and then filled with

water. This was preferred to the alternate method of placing the egg into boiling water. The former method was safer and also reduced egg breakage. Incorporated into the broiling and baking task analysis for safety reasons was the manipulation of the oven rack and employment of an underhand method to remove the food items to avoid arm contact with the heating coils located at the top of the oven.

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Insert Table 2 about here
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The baseline performance levels for each skill was determined by giving the general verbal cue (e.g., "Heidi, boil the egg.") and recording the number of steps performed independently. One baseline trial was conducted per session for each skill.

Following initial baseline, the trainer began instruction on the next step of the task analysis on boiling an egg which had not been performed correctly on two consecutive trials. Instruction utilized a three step cue hierarchy ranging from least to most intrusive. This instructional strategy was found to be an effective teaching method in a previous leisure skills program with a severely handicapped adult (Wehman, Schleien & Kiernan, Note 1). The trainer provided the verbal cue and socially reinforced an appropriate response. If an incorrect response occurred, the second step of the cue hierarchy was implemented. At this time, the verbal cue was repeated while the trainer modeled the correct behavior. Social reinforcement was provided for a correct response. Failure to elicit the desired response led to the final step of the hierarchy which entailed the trainer

once again giving the verbal cue and physically guiding the participant through the correct behavior, after which praise was given.

Five training trials on the targeted step was performed each session. Following instruction, the general verbal cue was given and the participant's behaviors recorded. No modeling or physical prompting was offered during the non-reinforced probes. Weekly probes were conducted following mastery of the skills to insure endurance of performance until all skills were mastered and generalized.

A reliability check was taken by a second recorder twice per week. Interobserver reliability averaged .97 across the three cooking skills.

Results and Discussion

The participant learned to prepare all three meals in the cooking program following a multiple baseline design. Figure 1 illustrates the number of steps of the task analyses performed correctly during baseline, instruction, weekly probes, and generalization for each cooking skill. Daily stable baseline rates were obtained for each skill, clearly demonstrating Heidi's low competency levels (e.g., 0-step proficiency during boiling an egg baseline) in this leisure area.

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Insert Figure 1 about here
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Boiling an egg, broiling an english muffin and cheese, and baking a TV dinner were instructed in that order. This skill sequence was

chosen by staff because of its increasing level of difficulty. Although there was a general increase in the number of steps performed independently throughout instruction, a jagged profile appears due to the participant's frequent seizures. Seizures occurring during instruction tended to impair performance significantly. However, Heidi frequently upgraded her performance on the following day and occasionally exceed her previous competency level. This resulted in the eventual acquisition of the skills. Number of sessions for skill acquisition varied from 23 to 46.

Weekly probes demonstrated the endurance of the participant's cooking performance while training was still in progress on the other skills. The results of the generalization probes were twofold: they demonstrated Heidi's ability to cook in other environments (i.e., another community training center, participant's home) using different cooking facilities, and secondly, the participant acquired the skills necessary for two general uses of an oven (i.e., boiling, baking), as well as three specific skills of boiling an egg, broiling a muffin, and baking a TV dinner.

The results of the present study clearly demonstrate the functional relationship between the systematic instructional procedures and materials/skill modification and the acquisition of different cooking skills. Since baselines on the second and third skills remained at low rates until intervention occurred, it is evident that the instructional program led to the development of these cooking skills in Heidi.

Generalization probes suggest that Heidi was able to transfer use of a stove, both to other environments (i.e., another community facility, participant's home) and across language cues (i.e., boil cooking packet, bake pizza). An attempt to generalize the broiling skill using a hot dog achieved negative results. This could have been due to a poor selection of food items since Heidi had previously been exposed to the boiling of hot dogs in the home. It may have been Heidi's logical assumption that the hot dogs be prepared in boiling water and not in the broiler. Eleven of the 12 steps were performed independently across the three generalization probes for baking and she successfully performed 13 of the 14 steps on the broiling skill in the home. It is believed that although performance on these trials did not reach 100 percent, it did represent a significant increase over pre-instruction ability. Furthermore, as was demonstrated when Heidi baked a pizza, a sufficient number of steps of the task analysis were performed correctly in order for her to independently cook a complete snack.

Today, in this country, many severely handicapped persons remain helpless and dependent on caretakers. In order to facilitate increased efforts at deinstitutionalization and prevent institutionalization, efforts such as this one with Heidi must be replicated with this population. The instructional and materials' development technology is available; it must be widely disseminated to practitioners and inservice provided to staff working with severely handicapped adults. Without such inservice programs, case study demonstrations will continue to provide only a glimpse of the potential of severely handicapped individuals.

Table 1

MATERIALS AND SPECIAL ADAPTATIONS FOR THREE COOKING SKILLS

Skill	Materials/Equipment	Modification
Boil egg	Egg	Hard-boiled egg (prevent breakage)
	Saucepan full of boiling water	Place egg into empty saucepan, then fill with water
	Water	-
	Stove: top stove burner	Color coded dial and burner; cover extraneous dials with placemats (to facilitate match-to-sample)
	Kitchen timer	Red tape strip (mark appropriate calibrations)
	Spoon	Slotted spoon (prevent scalding, easier to recover egg)
	Bowl	Extra large plastic salad bowl (prevent breakage, simplify accuracy)
Broil english muffin and cheese	English muffin	-
	Cheese slice	Pre-sliced American cheese
	Aluminum foil	Pie pan to simplify manipulation of muffin
	Stove: broiler	Color coded dial and broiler door; cover extraneous dials with placemats
	Kitchen timer	Red tape strip
	Pot holder	Gloved pot holder (ensure more complete safety)
Bake TV dinner	TV dinner	Empty TV dinner tray covered with aluminum foil (economically feasible)
	Stove: oven	Color coded dial and oven door; cover extraneous dials with placemats
	Kitchen timer	Red tape strip
	Pot holder	Gloved pot holder

Table 2

TASK ANALYSES FOR THREE COOKING SKILLS

I. Boiling Egg

Performance Objective: Given the appropriate cooking materials and kitchen stove (top burner), the participant will boil the egg until hard boiled with 100% proficiency on two consecutive days.

Verbal Cue: "Heidi, boil the egg."

1. Place egg in saucepan without breaking it.
2. Lift saucepan off stove with non-dominant hand using palmar grasp, and position directly under water faucet.
3. Turn water on with dominant hand to fill saucepan 1/2 full and turn water off.
4. Place saucepan onto top stove burner.
5. Turn burner on underneath saucepan.
6. Set electric timer for 15 minutes.
7. Wait for timer to ring.
8. Turn burner off.
9. Remove egg from saucepan using slotted spoon.
10. Place egg in bowl.

II. Broiling English Muffin and Cheese

Performance Objective: Given the appropriate cooking materials and kitchen stove (broiler), the participant will broil the english muffin and cheese with 100% proficiency on two consecutive days.

Verbal Cue: "Heidi, broil the english muffin and cheese."

1. Place slice of cheese on english muffin half.
2. Place prepared muffin onto oven tray.
3. Open broiler door.
4. Place tray on top rack in oven.
5. Close broiler door 3/4 way to first stop position.
6. Turn oven knob all the way to "broil".
7. Set electric timer for 5 minutes.
8. Wait for timer to ring.
9. Turn broiler off.
10. Place gloved pot holder on each hand.
11. Open broiler door.
12. Pull oven rack out half-way exposing oven tray.
13. Remove tray from broiler (with palm facing upward) and place on stove top.
14. Close broiler door.

Table 2 continued

III. Baking TV Dinner

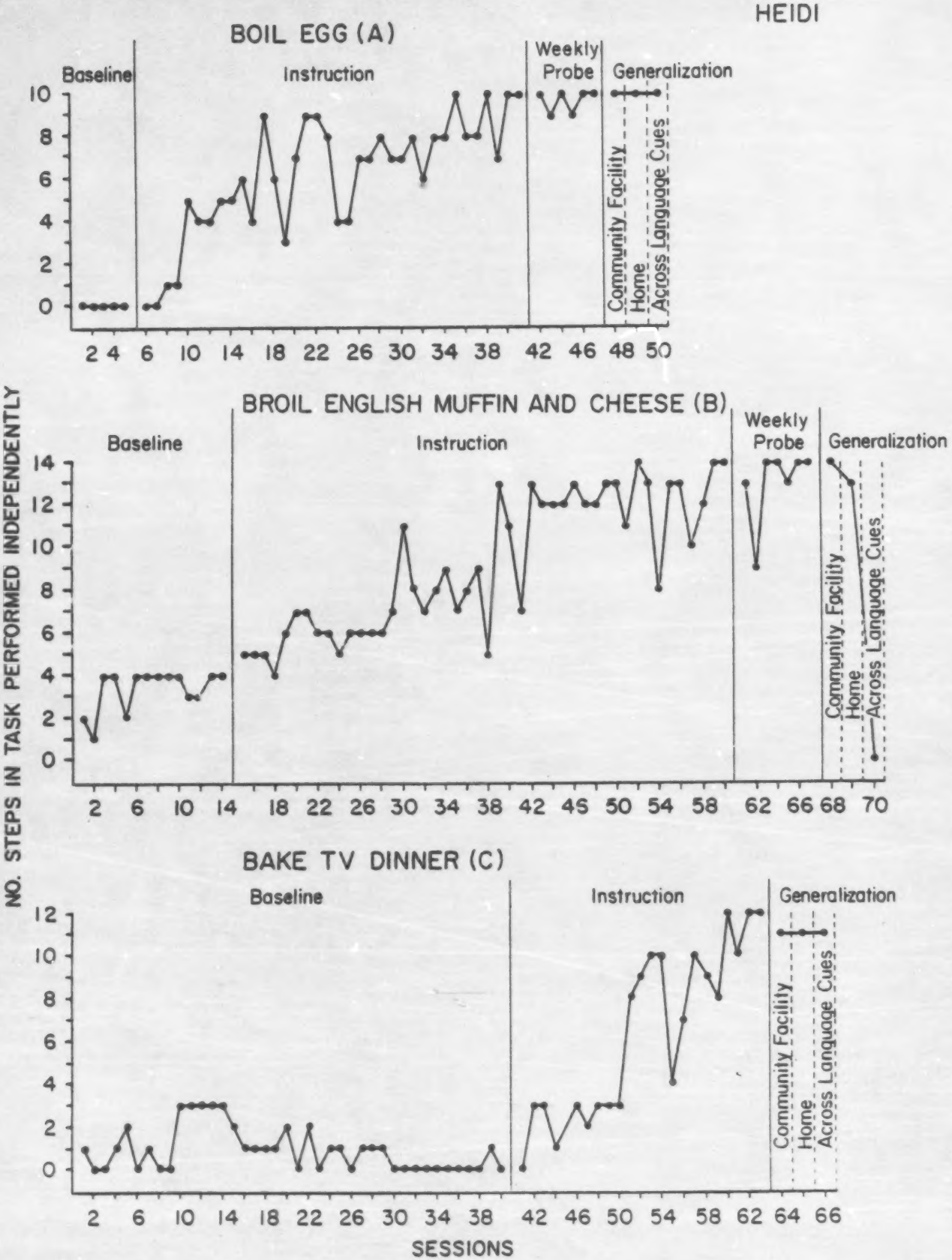
Performance Objective: Given the appropriate cooking materials and kitchen stove (oven), the participant will bake the TV dinner with 100% proficiency on two consecutive days.

Verbal Cue: "Heidi, bake the TV dinner."

1. Remove dinner from carton.
2. Open oven door using non-dominant hand and place TV dinner on bottom rack.
3. Close oven door all the way.
4. Turn oven temperature knob to "425°".
5. Set electric timer for 40 minutes.
6. Wait for timer to ring (participant should leave kitchen and resume other activity during this time).
7. When timer rings, turn oven temperature knob to "off" position.
8. Place gloved pot holder on each hand.
9. Open oven door.
10. Pull oven rack out half-way exposing TV dinner.
11. Remove TV dinner from oven and place on stove top.
12. Close oven door.

Figure 1. NUMBER OF STEPS IN THREE COOKING SKILLS PERFORMED INDEPENDENTLY BY HEIDI

HEIDI


BOIL EGG (A)
Baseline
Instruction
Weekly Probe
Generalization
Community Facility
Home
Across Language Cues
BROIL ENGLISH MUFFIN AND CHEESE (B)
BAKE TV DINNER (C)
NO. STEPS IN TASK PERFORMED INDEPENDENTLY
SESSIONS

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EVALUATING THE EFFICACY OF VERBAL PROMPTING, SOCIAL, AND TOKEN REINFORCERS ON WORKSHOP PERFORMANCE OF SEVERELY MULTIHANDICAPPED YOUTH

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Paul Wehman

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[2] Acknowledgements are extended to following teachers/aides for their participation: Theresa Simpson, Debbie Parker, Carlette Bailey, Barbara Mines, and Sondra Richardson.

Evaluating the Efficacy of Verbal Prompting, Social and Token Reinforcers on Workshop Performance of Severely Multihandicapped Youth

One issue relating to instructional intervention which has received little attention and yet greatly influences the performance of severely handicapped persons is the relative efficacy of verbal prompting versus social and/or token reinforcement. Each of these variables can also be compared individually with the combination of both factors. This issue is especially cogent in a sheltered workshop situation where productivity is a critical factor in job retention or in facilitating acceptance onto a rehabilitation counselor's caseload for placement. It would be helpful for instructional staff to know which of these variables is the most helpful in influencing work rate. In addition to effectiveness, the issue of efficiency must be considered. The efficiency question asks:Will these instructional variables help the student reach criterion performance more quickly than any other training situation?

For example, if continuous prompting is as effective as continuous reinforcement plus continuous prompting, then it would not be efficient for staff to engage in both types of instructional intervention. Although it is unlikely that the same set of instructional strategies will hold up for all severely handicapped youth, it would appear that a system for assessing the relative effectiveness of each variable would be beneficial to teaching staff.

Therefore, a pilot study was undertaken to assess the relative impact of verbal and token reinforcement versus verbal prompting versus a combination of both factors on the workshop performance of three severely multihandicapped adolescents. Two different vocational tasks were employed.

METHOD

Subjects and Setting

Three students were selected for this study. Steve is a 22 year old blind severely retarded male. Although he responds verbally to questions his responses are frequently echolalic. His most significant inappropriate behavior

characteristic is sleeping while at his work station. Debbie is a 12 year old, nonambulatory female who is classified as severely retarded. She is nonverbal but she is able to indicate needs through gestures. Significant inappropriate behavior characteristics include exhibiting off-task behavior and distractibility. Nathan is a 12 year old severely retarded male who has limited communication skills. Inappropriate behavior characteristics include incoherent laughter and low rates of excessive clapping, throwing objects, screaming and hitting the side of his face. Training took place in a simulated workshop located in an urban school for the severely and profoundly retarded. Debbie and Nathan were involved in the workshop 30 minutes daily. Steve participated in the workshop 60 minutes four days per week. Each student was assigned a simulated workshop task. Steve stuffed billing envelopes and Debbie and Nathan assembled ball point pens.

Procedure

Baseline data were collected on each client to assess initial production rates. During phase I, the baseline, the clients were only told when to begin and stop working. Baseline data were collected for three consecutive days prior to implementing phase II of the study.

Phase II consisted of three different types of trainer intervention. On a predetermined basis, each day one student would undergo one of the following types of intervention from the instructor: (1) Verbal Prompts only, (2) Verbal Praise and token delivery and (3) Prompts, praise and token delivery. In the verbal prompts only condition, the students received no social praise or primary reinforcers. Only prompts such as "hurry up", "keep working" and "work faster" were given every 30 seconds for repeated 10 minute work periods. In the verbal praise and token delivery condition, the students received no verbal prompts. Praise was delivered every 30 seconds if the student was working at

the time. If he/she was not working at the appropriate delivery time, the instructor waited until work began, then said, "good working", "nice job", or "you are really working fast" and tokens were dispensed according to an individualized criterion set for each student. The third condition in this phase consisted of a combination of all three types of interventions. Verbal prompts and praise, such as those previously described were given according to the speed of the student and tokens were delivered on an individualized reinforcement schedule.

Each intervention condition was presented in a counter balanced sequence as shown in Table 1. The intervention period of the study was conducted for

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32 days. The purpose of this phase was to assess which, if any, of the different types of intervention altered the production rates most significantly. A mean rate under each type of intervention was then determined from the daily production rates. The optimal intervention was then selected for phase III of the study based upon data showing which form of intervention yielded the highest mean production rate in phase II. Upon completion of the optimal intervention condition, Phase IV, a maintenance phase was then implemented. During maintenance, the reinforcement schedule was gradually thinned by requiring the students to work for longer periods and receiving fewer tokens, prompts, and praise.

Results

As shown in Figure 1 phase II of this study, which provided alternating

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intervention on a nearly daily basis, did not show radical increases in responding over baseline behavior except with Steve. Debbie's and Nathan's pro-

duction rates remained relatively low and variable and Steve also showed variability in this phase. Since no clear trends can be viewed in phase II, mean production rates under each type of intervention were established for each student. As can be seen from Table 2, average production rates were slightly higher for each student under the intervention which included prompts,

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praise, and token delivery.

Phase III made up of the prompts, praise and token condition on a consistent and daily basis, showed marked increase in production for all three students.

Phase IV the maintenance phase showed no major decreases in production rates.

Discussion

As might be expected, the results of this study show that the severely handicapped students assessed worked most productively under an intervention which included prompts, praise and token reinforcement. In addition their production increased when the same type of intervention was used consistently over several training days as in Phase III rather than with alternating treatments as seen in Phase II for all three students. This observation suggests the need for consistency, not only within a teaching session, but over repeated sessions.

A follow-up study which would be a more stringent test of this hypothesis would be to run each instructional condition over a period of time and then return to baseline before moving to the next instructional condition and subsequent return to baseline. This strategy would omit the potentially confounding factor of comparing a combination of variables which is provided

consistently versus isolated variables which are provided on alternating days.

It is of note that Phase II reveals that all three students produced at slightly better rates under prompt only condition rather than under a praise and token delivery only condition. One would think that positive reinforcement would produce higher work rates than prompting alone; however, this data illustrates the artificial nature created by the praise and token only condition especially with low functioning individuals as in the present study. These students were highly distractible and had only been working in the shop a short time; therefore, the natural discriminative stimuli (i.e., the work materials) was not potent enough to produce work even though they knew they would be rewarded for the work once begun. The instructors did not give prompts to the students during this condition even though they were aware that the students were most dependent on verbal cues.

This study does yield some guidelines for programmers attempting to include young severely retarded individuals within a work environment. First, the consistency of teaching techniques must be maintained not only in acquisition phases but also in production acceleration phases with the lower functioning worker. Secondly, the rewarding of appropriate behavior alone may not produce the highest work rates but rather low functioning behavior may be cue dependent and require initial verbal prompting; thus, the schedule of prompting as well as reinforcement should be systematically thinned with the severely retarded worker.

Table I

Intervention code:

A = Prompts only
B = Praise & Tokens only
C = Prompts, Praise & Tokens Delivery

Type of Intervention	Monday	Tuesday	Wednesday	Thursday
	A	B	C	C
	B	A	A	C
	B	B	C	A
	A	B	C	C

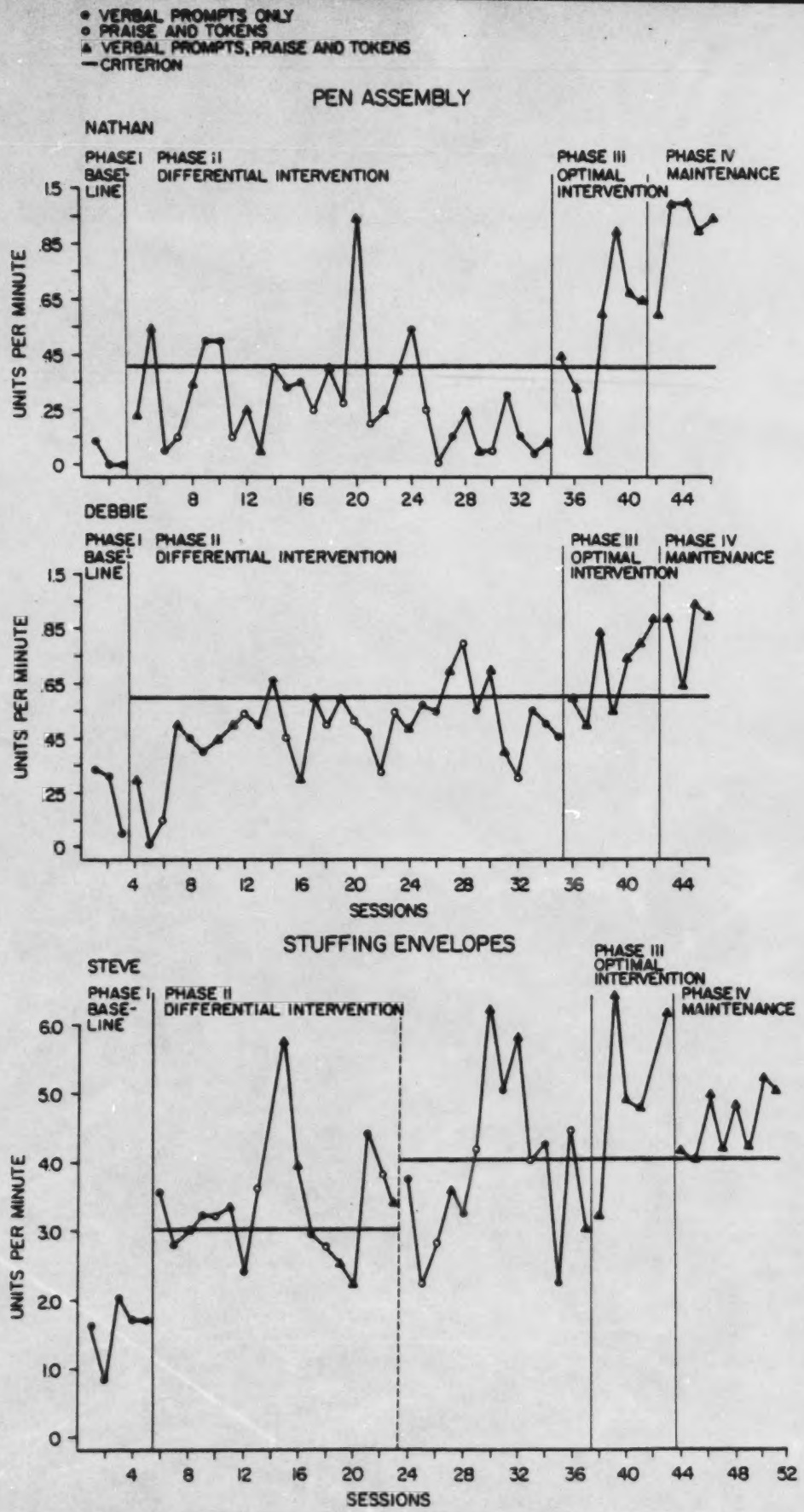
Table 2

Mean Production Rates in Phase II

	Prompts Only	Praise & Tokens	Prompts, Praise & Token Delivery
Steve	3.53 per min.	3.30 per min.	3.90 per min.
Debbie	.48 per min.	.39 per min.	.49 per min.
Nathan	.29 per min.	.19 per min.	.33 per min.

Figure Captions

FIGURE 1 - WORK RATES PER MINUTE FOR THREE STUDENTS UNDER DIFFERENTIAL INTERVENTION


● VERBAL PROMPTS ONLY
○ PRAISE AND TOKENS
▲ VERBAL PROMPTS, PRAISE AND TOKENS
—CRITERION
PEN ASSEMBLY
NATHAN
PHASE I BASE-LINE
PHASE II DIFFERENTIAL INTERVENTION
PHASE III OPTIMAL INTERVENTION
PHASE IV MAINTENANCE
UNITS PER MINUTE
1.5
.85
.65
.45
.25
0
8 12 16 20 24 28 32 36 40 44
DEBBIE
PHASE I BASE-LINE
PHASE II DIFFERENTIAL INTERVENTION
PHASE III OPTIMAL INTERVENTION
PHASE IV MAINTENANCE
UNITS PER MINUTE
1.5
.85
.65
.45
.25
0
4 8 12 16 20 24 28 32 36 40 44
SESSIONS
STUFFING ENVELOPES
STEVE
PHASE I BASE-LINE
PHASE II DIFFERENTIAL INTERVENTION
PHASE III OPTIMAL INTERVENTION
PHASE IV MAINTENANCE
UNITS PER MINUTE
6.0
5.0
4.0
3.0
2.0
1.0
0
4 8 12 16 20 24 28 32 36 40 44 48 52
SESSIONS

SHAPING WORK PRODUCTION IN SEVERELY AND PROFOUNDLY RETARDED YOUTH: A CHANGING CRITERION APPROACH

Janet W. Hill[1,2,3] Nadine Harris

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2 Acknowledgements are extended to the following teachers/aides for their participation: Theresa Simpson, Carlette Bailey, Linda Abbey, Sondra Richardson and Helen Richardson.

3 The apparatus used was designed by Kenneth Macurik. Requests for information should be addressed to Kenneth Macurik, Director, Training and Research, Southside Virginia Training Center, P. O. Box 4110, Petersburg, VA 23803.

Shaping Work Production in Severely and Profoundly Retarded Youth: A Changing Criterion Approach

Severely and profoundly retarded adolescents who have never worked before usually exhibit minimal tolerance for sitting at a manual job for protracted periods of time. For example, Mithaug (1978) observed in several case studies that, although manual work training was an excellent means of reducing inappropriate social behavior, initial high levels of aggression were displayed by students. Numerous workshop oriented studies have been performed successfully, however, with the moderately, severely and profoundly retarded (Bellamy, Peterson and Close, 1975; Karan, Wehman, Renzaglia and Schutz 1976; Karan , 1979). Most of these studies have shown the workshop capacity of severely handicapped adults.

Bates, Renzaglia and Clees (1980) recently conducted three case studies which documented an excellent shaping strategy for accelerating workshop production, By gradually making the criterion for reinforcement more stringent, the clients slowly but surely continued to exceed their previous output. The changing criterion strategy (Hartman and Hall, 1976) has not been used extensively in workshop settings (Bates, Wehman, and Karan, 1976) but appeared to be a promising technique to try in the present program which serves severely and profoundly retarded adolescents with no previous workshop production experience.

Therefore, in order to further investigate and replicate the Bates, et al. (1980) study, two separate programs were undertaken in a local public school serving severely and profoundly retarded adolescents. Two techniques for decreasing the dependence of the worker on teacher/supervisor intervention are examined. The first study examines the use of a changing criterion strategy

including a response cost maintenance program and the second study utilizes the use of automated reinforcement through a token dispenser following an extended period of teacher intervention.

STUDY 1 - JOHN

METHOD

Participant and Setting

John is a 21 year old male classified as severely retarded. He is non-verbal, but communicates some needs through picture cards when requested.

A vocational workshop had been established within the public school program in which John was enrolled. John attended the workshop for 90 minutes to two hours, four days a week. His task was to assemble 5 piece ball point pens, at acceptable rates according to quality standards.

Program Objective

One of the initial goals of this program was to help John to develop a minimum work endurance of 90 continuous minutes on a daily basis. In addition, John was to produce quality ballpoint pens at rates comparable to those of employees in the local sheltered workshop, (i.e., approximately 15 to 25% standard production rate for a 90 minute period.) The annual goal also included building up to no more than three short breaks within the work period during which tokens could be exchanged for tangible reinforcers. As John progressed, instead of exchanging tokens at the break, he would put them away and save them until the end of the period.

Procedure

Baseline data were collected prior to any intervention. During that period, John was given the "get to work" cue and left alone for several 10 minute sessions. No prompts or reinforcement were delivered during baseline. Baseline continued for 10 consecutive days.

Phase II of the program was then implemented. This phase required John to work consistently for a five minute period before he would receive a tangible reinforcer. He would receive a token to exchange for a tangible if he completed eight pens before a kitchen timer signaled the end of the five minute period. John received one token for each pen he assembled correctly. At the end of the session, if eight tokens had been earned, he had the opportunity to buy what he wanted such as: chips, cookies, candy, handkerchief, cards, etc. As soon as he had exchanged his tokens, the timer was reset and another five minute work period began. Thus, his target production rate or criterion for this phase was 1.6 pens per minute. To enhance the potential of John's understanding of the amount of tokens he needed to earn, as well as the number of pens he needed to produce, cue forms were drawn for the tokens and the pens produced. The cue forms provided spaces indicating the desired number of pens and tokens needed to purchase items, (Renzaglia, Wehman, Schutz and Karan, 1978). When John made a pen and received a token, he placed it on the corresponding space(s) on the form. This gave him a visual picture, (i.e., when all spaces were covered with tokens and pens), he could buy something. It also showed him, visually, that when spaces were vacant he could not purchase desired items.

This procedure continued until he consistently (i.e., three consecutive days), produced pens at the rate of 1.6 or more pens per minute for five minutes. At this time Phase III was implemented. In this phase, the criterion was raised to require two pens per minute for 10 minutes or 20 pens in 10 minutes. The reinforcement schedule was not changed during this phase; if he had earned 20 pennies or more when the timer rang, he was given the opportunity to purchase the items he wanted. This phase continued until John's production

rate of two or more pens per minute was maintained consistently. Phase IV included increasing the work period before token exchange and the criterion for reinforcement. The work period was lengthened to 15 minutes before token exchange took place and the criterion was increased to three pens per minute. The token delivery schedule was decreased to one penny for every five pens produced in the 15 minute period. If John earned nine pennies, he was given the opportunity to purchase the items he wanted at the break. The pen and token cue forms were also faded during this phase. When John produced three pens per minute for each 15 minute work period over three consecutive days, Phase V was implemented. Phase V consisted of doubling the work period before token exchange to 30 minutes and again thinning the number of tokens delivered. In this phase, the timer was set for 30 minutes, John was given a work prompt but the supervisor provided only intermittent attention and reinforcement. A token was delivered approximately every three minutes contingent upon John's exhibition of on-task behavior when the supervisor chose to walk by his work station. During this phase, John's production dropped markedly and he began to ignore prompts to speed up. The supervisor had the option either to reduce the criterion and attempt to regain stimulus control or to choose a more punitive approach. Because of John's age (21), the latter option was taken. Thus, Phase VI consisted of the same work period duration and intermittent token schedule as in Phase V, but response cost was added when the supervisor walked by and noticed that John was not working. On these occasions she gave him a slight verbal reprimand and took away one token.

RESULTS

Figure 1 shows that during phases II, III and IV, John's production rate

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Insert Figure 1 About Here
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increased from producing 1.6 pens per minute working for five minutes to three pens per minute in 15 minutes. When the work period was doubled in Phase V, marked decreases in production rates were observed which were below initial work rates, (i.e., below 1.6 pens a minute). When response cost was initiated, in Phase VI where tokens were taken away when work was not observed, John's production rate steadily increased to over three pens per minute and he exhibited continuous work behavior for 30 minute periods.

STUDY II - RANDY AND STAN

METHOD

Participants

Two young men classified as severely retarded, who attended the same city school for the severely and profoundly handicapped as in the previous study, participated in this program. Both of these young men acquired the skill of assembling an eight piece boiler drain, (a small faucet), while receiving vocation training in the workshop at school. Randy, 18 years of age was attending the workshop four days per week for 90 minutes per day. Stan, 14 years of age, attending the workshop five days a week for 30 minutes a day. Both young men exhibited high rates of sterotypic self-stimulatory responses and required much supervision to maintain on-task behavior.

Program Objectives

The major goal during this program was to increase the duration of continuous on-task performance and to raise production rates to compare with those of sheltered workshop employees. In addition, the program attempted to examine methods of decreasing trainer intervention while maintaining accelerated production rates.

Apparatus (token dispenser)

In the final phase of this program a token dispenser was introduced. A plywood box (30 cm. x 40 cm. x 20 cm.) housed a solenoid operated token dispenser which presented pennies to students on a continuous schedule of reinforcement. A wooden trap door (12 cm.x 12 cm.) on the top of the box was held closed by a counterweight. When the student in the vocational training program placed a completed component (boiler valve assembly) on the door, the weight caused the door to drop down and the component fell into a holding tray within the box. Also, in the downward swing, the door depressed a microswitch which activated the token dispenser. A plastic cup collected the tokens dispensed for each item of work completed.

Procedure

A baseline period was provided following the acquisition of the skill for both students. Prompts to begin and end work were given; no other intervention occurred during this period. Following baseline, a changing criterion intervention strategy was implemented with both students. Phases II, III, and IV consist simply of gradually making the criterion for reinforcement more stringent. In this study not only did the students have to work faster but also they had to work for longer periods before being allowed to exchange their tokens for desired items.

In Phase II, both Randy and Stan were required to work continuously for five minute work periods and produce a targeted number of units (Randy's criterion = .40 per minute and Stan's = .20). The short work periods and low criteria were set to ensure success and reinforcement based on previous knowledge of these easily distracted students.

Each student received one penny for each boiler drain correctly assembled and could purchase desired items if enough tokens had been earned when a kitchen timer signaled the end of the five minute work period. As in Study 1, cue forms were also used to enhance understanding of the criterion and time constraint. After token exchange was accomplished, the timer was reset and work began again.

Phase III consisted of increasing the length of the work period and the amount of units to be produced for both students. In this phase, Randy first had to work to 10 minutes before token exchange and produce five boiler drains, (i.e., .5 units per minute). Later, in this same phase, the length of the work period was increased to 15 minutes; however, the rate per minute criterion was not raised. Stan, on the other hand, was quite distractible; therefore, phase III for him, consisted of work periods of seven minutes only, allowing for more frequent reinforcement. However, his production requirement was more than doubled to .425 units per minute.

Phase IV was implemented when the students had produced at an acceptable rate under these criteria for three consecutive days. During this phase the length of Randy's work period doubled to 30 minutes and the production criterion of .5 per minute was maintained. Stan's work period was increased to 10 minutes. He was also required to produce .5 boiler drains per minute. The reinforcement schedule was unchanged.

During all phases except baseline, the teacher frequently gave "hurry-up" prompts and social reinforcement (tactile and verbal). The teacher would encourage both students to meet their criterion as much as needed. Prompts or praise often occurred as frequently as every 10 - 20 seconds. In order to examine methods to reduce this frequent intervention from the teacher, these

students underwent return to baseline procedures for a short period and then were exposed to automated reinforcement with reduced teacher attention, (i.e., the token dispenser rather than teacher intervention).

Phase V consisted of a reinstatement of baseline procedures, that is, no tokens were delivered and the frequent prompts were discontinued. Following baseline, the trainer demonstrated the use and purpose of the token dispenser to both students.

Phase VI consisted of minimal teacher attention and token reinforcement through the token dispenser only. Although students received a token for each unit produced, they were required to earn the target number of tokens before the end of each work period. Randy continued to work for 30 minutes before exchanging tokens and Stan for 10 minutes. The teacher provided prompts or praise on a variable ratio schedule of approximately every two minutes only.

RESULTS

Phase I or baseline showed extremely low production rates for both students. Phases II, III and IV showed successful intervention through changing criterion procedures with teacher prompts and praise as well as token delivery. All three of these phases show gradual increases in the production rate and duration of work. Lengthening Stan's continuous work periods prior to reinforcement was more difficult to improve due to distractibility. Throughout the study Stan worked continuously for 10 minute periods only.

In Phase V, return to baseline, both students exhibited marked and dramatic decreases in production. It is of note that this baseline period with the accompanying decrease in production occurred after 70 days of continuous programming for Randy and 42 days for Stan.

Phase VI, use of token dispenser, initially produced work behavior which was below criterion levels; however, after four or five sessions, production rates for both students were comparable to those seen in Phase IV.

Discussion

The results of both of these studies indicate that the changing criterion approach can be most successful when gradually increasing the length of work periods. As observed in both studies, however, care must be taken in the speed or size of changes in the criterion or length of work periods. For instance, with John in Study I, when the length of his work period was doubled in Phase V to 30 minutes his work rate dropped to near baseline levels and remained low even though the teacher greatly increased the verbal prompts and praise during the work periods. To prevent such problems, the changing criterion approach should be gradual, especially with the more severely handicapped. Both studies underscore the dependency of the severely retarded worker on direct teacher contact and intervention. It is this dependency which inhibits the competitive or sheltered employment potential of the severely retarded. Both studies also, however, show techniques to reduce the need for teacher/supervisor intervention while maintaining comparable production rates.

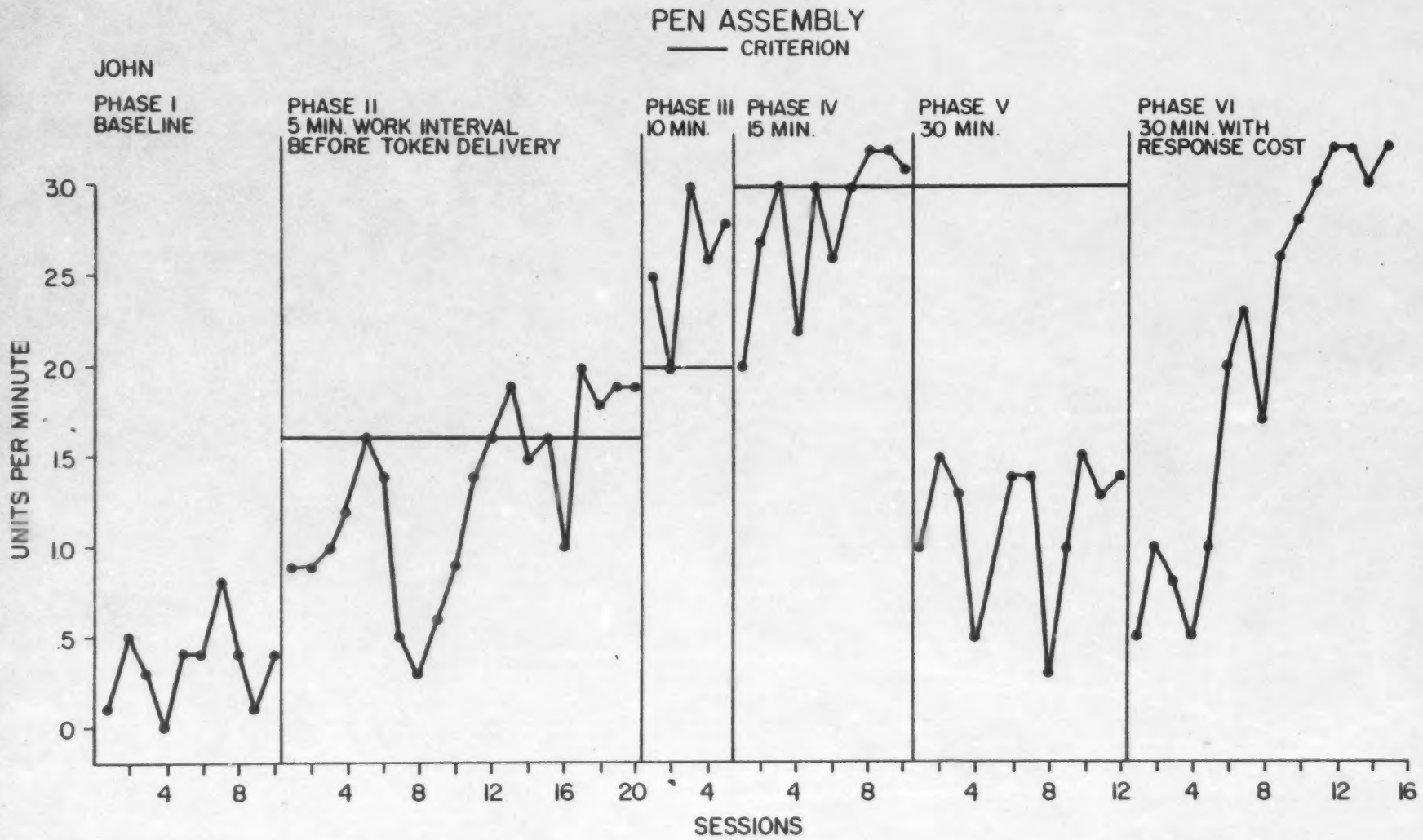
In Study I, when the teacher/supervisor began walking around the room during the 30 minute work period supplying less attention and only intermittent reinforcement, John's production rate dropped and remained low as stated above. Instead of supplying more teacher attention and reinforcement, a random response cost procedure was implemented which required little direct teacher time. This procedure enabled John to return to previously high production rates. Study 2 also showed that through automated reinforcement, production rates could be maintained which were comparable to those when the teacher directly and continually intervened. Research has indicated that with adequate reinforcement

and attention the severely retarded can produce relatively complex work units at production rates comparable to less handicapped individuals. However, at this juncture, further examination of techniques such as these to increase the independence of these workers is needed.

Figure Captions

Figure 1 - Work Rate Per Minute Under a Changing Criterion Strategy with Response Cost.

Figure 2 - Work Rates Per Minute for Two Students Under a Changing Criterion Strategy with Automated Reinforcement.


PEN ASSEMBLY
CRITERION
JOHN
PHASE I
BASELINE
PHASE II
5 MIN. WORK INTERVAL
BEFORE TOKEN DELIVERY
PHASE III
10 MIN.
PHASE IV
15 MIN.
PHASE V
30 MIN.
PHASE VI
30 MIN. WITH
RESPONSE COST
UNITS PER MINUTE
0
5
10
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20
25
30
4
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SESSIONS

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